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PUBLIC SCHOOLS
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BUSINESS ADMINISTRATION OF PUBLIC SCHOOLS

BY
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Edited by E. E. LEWIS



1929

WORLD BOOK COMPANY

Yonkers-on-Hudson, New York

379.11
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WORLD BOOK COMPANY
THE HOUSE OF APPLIED KNOWLEDGE

Established 1905 by Caspar W. Hodgson

YONKERS-ON-HUDSON, NEW YORK

2126 PRAIRIE AVENUE, CHICAGO

Also BOSTON : ATLANTA : DALLAS

SAN FRANCISCO : PORTLAND : MANILA

During a lull in one of his great campaigns Napoleon took over the business administration of his army. No detail was then too small to escape his attention. When he had learned the price, place of purchase, and disposition of each article of equipment, he remarked with satisfaction, "Now I understand the workings of an army!" The master strategist was the master administrator. Just so the competent educator is a competent administrator: equipment and purpose, means and end, are all of a piece to him. He does not concern himself exclusively with instruction, leaving it to others to find and control the means of instruction. The school plant, books, service, supplies, and revenues and expenditures all properly come within his purview. Into these subjects he inquires, for he purposes to understand the workings of his school or system. To assist educators, and particularly superintendents of schools, in the study of the business side of their profession this book was written. The publisher is pleased to present it as the first of a series of special works on school administration.

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TO MY WIFE
COLEEN M. SMITH

COMPANION IN WORK AND IN PLAY

PREFACE

IN submitting this treatise to the profession the author has but one motive — the presentation in brief form of those activities and practices which are usually associated with the business aspects of public school administration. There is an insistent demand on the part of the public that education be administered according to sound business principles. Ample ground for this feeling undoubtedly exists in the vast sums of money annually expended for all forms of education.

It is imperative, therefore, that administrators and those training for administrative work make themselves familiar with the best thought and practices in the field of public school business administration. To command the respect of other competent business and professional men the school administrator must show himself to be a master in this field. No longer is it safe to assume that experience alone will provide the necessary training; it is equally futile to depend upon the trial-and-error method. Specific training is just as essential for the handling of activities and practices related to the financing of education as it is for the administration and supervision of instruction.

The basis of every phase of school administration is fundamentally educational, but too long has it been assumed that the administrator is interested in this aspect of his work alone. Every phase of school administration has a business as well as an educational aspect. It is therefore imperative that the two be considered a unit, if the primary function of the school — the production of socially desirable changes in the youth of the land — is to be accomplished most effectively. This point of view the author attempts to maintain, although he limits himself in this volume to a consideration of the financial and business phases of administration.

Where scientific studies are available, they have been drawn upon for principles and concrete materials. Where such studies are lacking, the author has resorted to the statements of experts in their fields. Scientific studies are now appearing with such frequency, however, that the best business practices for school systems of various sizes will soon have been definitely established.

The Selected References, listed at the end of most of the chapters, have been limited almost wholly to books and articles dealing with education. They have been carefully evaluated by students of administration so that reference is made to the better ones only. The primary purpose of the lists is to make available a selected bibliography in the field of business administration of public schools.

The author is greatly indebted to many writers and publishers for permission to use their materials. Because proper acknowledgment is made wherever such material appears, specific acknowledgments are omitted from this prefatory statement. To his friends and co-workers for reading the manuscript and making suggestions, and to his wife, Coleen M. Smith, for her untiring assistance throughout the work, the author is also obligated.

HARRY P. SMITH

SYRACUSE, NEW YORK

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EDITOR'S INTRODUCTION

DR. HARRY P. SMITH, the author of this book, was for some years a public school administrator. Early in his career he had charge of a school system in a small middle-western city, with full responsibility for both its business and its educational administration. The president of his board was vice-president of a large corporation doing a nation-wide business. One of his first statements to the new superintendent was: "Mr. Superintendent, you bear the same relation to this school system that our general manager does to our corporation. As a board we are a legislative and an appraisement body; you are to administer and supervise these schools in both an educational and a business way. We shall hold you responsible for their successful operation."

The new superintendent had never seen a school budget. He was not acquainted with a school accounting system, though he had had an elementary course in accounting. He had taken the usual professional courses in education as an undergraduate, and a few graduate courses; but such items as budget making, financial accounting, unit costs, plant operation, plant maintenance, the planning of school building programs, the construction of a school building, the floating of a school bond issue, and the like, had never been mentioned in any of these courses. As a young administrator he hardly knew where to turn for advice. The first bond issue that he inaugurated was rejected by a Chicago bond house because of a slight technicality; and the first elementary school building put up under his administration, the location of which was chosen on the advice of optimistic real-estate dealers, proved to be an exact duplicate of another building in a near-by city.

These and other experiences early called his attention to a phase of administration that was neglected not only in the university courses offered to superintendents of schools, but

also in educational literature. He soon discovered that general training for educational administration did not transfer to such situations as the planning of school buildings, the formulating of budgets, and the floating of school bond issues. His was no doubt a common experience.

Years later, after further study in the field, Dr. Smith gave courses in school administration in a state university. He found other superintendents as deficient in technical information as he had been. To meet this situation he mapped out a composite course in problems of school administration, half of which was concerned with problems of finance and the other half with the planning of school building programs and individual school buildings. The course was well received and was soon expanded into two, one of which dealt with educational finance — local, state, and national — and the other with the business administration of schools.

In planning his courses in school administration Dr. Smith encountered a great need. There was at the time no manual covering either of the two fields with which he was working. Only limited monographs and highly technical magazine articles were available. There was no book that he could recommend to his students. Meanwhile public school expenditures were mounting, and boards of education and taxpayers alike were demanding greater efficiency in the administration of public school systems.

Dr. Smith took a year's leave of absence and spent part of it visiting cities of various sizes, where he studied their methods of handling the business affairs of their school systems. He returned to the university more thoroughly convinced than ever that school superintendents, school board members, and students of administration needed a handbook that would set forth clearly, simply, and in non-technical terms the materials available in this field. Its principles should be theoretically sound and applicable to the

typical American city, which is a relatively small city. Along with these principles should go much concrete material in the form of tables, diagrams, and business forms. The result of this conviction is *Business Administration of Public Schools*.

Business Administration of Public Schools is designed to serve both as a handbook for superintendents and school board members and as a text for students of school administration. It is simple in outline, clear in statement, sound in its basic principles, and treats practically every business activity that is of any possible consequence to the school administrator. With its large amount of concrete material it should constitute an excellent teaching manual. With its simplicity of arrangement and its clarity of style the book should appeal particularly to inexperienced superintendents and school board members in the smaller cities and communities. Colleges in increasing numbers will offer courses in business administration for which this work may be used to advantage. It should also prove of value as a reference work for libraries, both public and institutional.

E. E. LEWIS

BUSINESS ADMINISTRATION OF PUBLIC SCHOOLS

CHAPTER ONE

INTRODUCTION

THE EARLY SCHOOL A SIMPLE COMMUNITY UNDERTAKING

THE early New England colonial school was a simple community undertaking, unconcerned with complicated problems of finance, curricula, or personnel. The town meeting as a whole directed this school as it did other civic matters such as the building of roads and maintaining of common defense. The people voted to establish a school, they devised methods of financing it, and then in true congregational style they voted to invite some individual to become the teacher. There was no differentiation of function or delegation of authority, nor was there any need of either.

As the enterprise of education grew, it became apparent that certain aspects of it could better be handled by smaller groups than by the town meeting as a whole. Accordingly in 1654 the Massachusetts General Court directed the selectmen to exercise some supervision over the character of the teacher employed. In 1693 the selectmen and the towns were jointly charged with maintaining schools, and the former were given power to levy taxes for the schools after the town meeting had voted such taxes. A few years later, 1701-1702, the ministers were authorized to certificate the master for the grammar school; and in 1711 the selectmen were delegated to examine and certificate teachers for the elementary schools.¹ The certification and selection of the

¹ Ellwood P. Cubberley, *Public School Administration*, page 73. (Houghton Mifflin Company, Boston; 1922.)

teacher and the collection of tax money were thus delegated to special groups; but the town as a whole still voted funds, cared for school property, and directed the instruction given.

As the tasks of the school became more complicated, there was a tendency to appoint special committees for specific purposes. Not infrequently these committees were appointed for a definite period of time. So common did this practice finally become that in 1798 cognizance was taken of such committees in a law relating to the certification of teachers. This same law also made the visitation and inspection of schools a uniform requirement upon the ministers and selectmen, or the committees, of the several towns. This marks the beginning of supervision in Massachusetts. The final step was taken in 1826 when each town was directed to elect a separate school committee to have "general charge and superintendence of all the public schools" of the town.¹ The voting of school support was the only important function remaining in the hands of the people.

In a period of two centuries, then, there was an evolution beginning with complete control of education by the town meeting as a whole, and extending to the delegation to special committees or groups of citizens of all aspects of that control — with the single exception of voting of funds. Through still another century this process of evolution has been going on.

FURTHER DEVELOPMENT

Each city or town was originally a single school district governed by one board, to which were added, as population increased, other districts with their boards. Or a community was from the beginning a series of independent districts, each governed by its own board of control. It was inevitable, however, that common problems should appear — problems of taxation, of higher schools, and of expenditures. The

¹*Op. cit.*, pages 74-75.

outcome was a centralizing board with, at first, a continuance of local boards to take care of purely local problems. This plan was gradually superseded by one providing a central board composed of ward, or district, representatives. A still later development was the small board elected at large or appointed by the chief executive officer of the city.

Notwithstanding the existence of all these types of local control, public education has always been a direct function of the state. Local districts are but agents of the state, organized to carry out its policy. This doctrine has been enunciated again and again in statutory law and in court decisions from the lowest to the highest tribunals, until it has become one of the most fundamental principles of our educational control. The city school district is then merely representative of the state, commissioned to carry on an important function of the state — the education of its future citizens.

The board of education, school committee, or school board intrusted with the control of the public schools in a community has faced problems of ever-increasing complexity — problems of housing, of health, of sanitation, of pupil classification, and of new social demands for the enlargement of educational activities. With these are correlative problems of equipment — often a highly specialized problem — of a highly trained personnel, and of supplies. Any board of education controlling a modern school system, large or small, is confronted with a multitude of activities and problems that are almost overwhelming.

DIFFERENTIATION OF EXECUTIVE FUNCTIONS

With the multiplication of activities and the accompanying demands for physical accommodations has come the correlative problem of finding ways and means of adequate financial support without waste of public funds. For a long time

after boards of education began to delegate the professional aspects of administration to paid experts, they retained administrative control of the details of housing, equipping, and financing the schools. In fact, the municipality has in some instances to this day retained supervision of the school plant, particularly in some New England cities.

With public educational expenditures now representing from 25 to 60 per cent of the entire tax revenue of a given community and from 1 to 2 per cent of the total national income, the administration of these has become too detailed and complicated for unpaid school board members to handle. As a result boards of education have delegated administrative functions to officials presumably more or less expert in the field that they cover. Consequently there exists a group of officials variously known as "business managers," "business agents," "business executives," and "board secretaries" — the functions of whom are other than those usually pertaining to the secretary of a corporation. In some instances these officials are independent of the professional executives, the assumption being that the functions of the two are so entirely separate and distinct that they cannot be combined. If a dispute or disagreement arises between the two, the board acts as arbiter. In other instances the executive in charge of business affairs is subordinate to the professional executive, the assumption being that every problem arising in connection with the schools is, in the last analysis, educational and therefore should be under the direction of the educational executive.

Divided responsibility, characteristic of many cities, has undoubtedly arisen through a perfectly natural evolution. In *The Legal Status of the City School Superintendent*, quoting from a series of Connecticut statutes of different periods, Dr. J. C. Morrison points out how, through a process of evolution, a dual control of local school administration arose,

“with a local school committee responsible for the financial or physical aspects of school affairs and a board of school visitors responsible for the instructional activities.”¹ He traces the evolution of the “board of school visitors” through its various changes into the present superintendent of schools, whose requirements for eligibility are determined by the state and whose choice must have state approval. The direction of this superintendent and the administration of certain aspects of school affairs are largely in the hands of the school committee.

Dr. Morrison further points out in the case of Ohio that the two types of administration became differentiated clearly enough so that in the Ohio State Laws of 1880 “each board was explicitly empowered ‘to appoint a superintendent and assistant superintendent of the schools, [and] a superintendent of buildings.’” This latter official is known as a “director of schools.” “His only legal connection with the superintendent of schools is a requirement that ‘the pay roll for teachers, assistant teachers, and supervisors shall be countersigned by the superintendent of instruction.’”

We thus see the early differentiation of the two types of functions and their later delegation to two executive officers. In Connecticut the purely professional aspects of school administration were delegated ultimately to a superintendent of schools, working under the direction of a board that was responsible in turn to the people for both aspects. In Ohio a similar differentiation exists; but, in addition, there is here a definite delegation of certain business matters to a second administrative official who is directly responsible to the board but has practically no legal connection with the superintendent of schools to whom the educational functions had previously been delegated.

¹ John C. Morrison, *The Legal Status of the City School Superintendent*, pages 10-27. (Warwick and York, Inc., Baltimore; 1922.)

RISE OF THE PROFESSIONAL EXECUTIVE

Through a long process of evolution the control of the public schools has passed from the community as a whole to a selected group which is given the entire control of the community's public educational institutions. This group, in turn, has delegated the strictly professional phases of its work to a trained executive officer. As its business affairs have become increasingly complicated and burdensome, it has delegated these to an executive or executives who may or may not be subordinate to the one directly in charge of the educational program. The development in Philadelphia and in Cleveland is typical of what has happened in the school districts of many American cities.

The first superintendent of schools in Philadelphia was elected in 1883. "There was in existence at that time the business manager of the school system, who was known as the secretary of the board. He was the executive officer of the board and of the school system. . . . It was not the intention of the board when it elected a city superintendent to make him its executive officer. The real purpose of bringing a city superintendent was to place him in charge of the supervision of instruction in the elementary schools."¹

In Cleveland, Ohio, a similar situation arose where a "director of schools" was early appointed. "The first director was termed the acting school manager and was appointed in 1841, some twelve years before the employment of the first superintendent of schools."²

Through the years a feeling has arisen that school administration includes two distinct branches of work—business and education. This feeling is caused partly by the evolution

¹ Thomas E. Finegan and others, *Report of the Survey of the Public Schools of Philadelphia*, Book II, page 20. (Public Education and Child Labor Association, Philadelphia; 1922.)

² Leonard P. Ayres, *School Organization and Administration*, pages 21-22. (Russell Sage Foundation, New York; 1916.)

through which the control of schools has passed. Often the attitude of the board of education itself contributes to this idea. The Philadelphia and Cleveland situations are typical.

Professional school men have also contributed in no small measure to this conception. Early pronouncements of the National Education Association emphasized the division. In the decade from 1880 to 1890 such authorities as Josiah L. Pickard, B. A. Hinsdale, and Andrew S. Draper assumed that there should be two separate departments. Dr. Josiah L. Pickard in addressing the National Education Association in 1883 said:¹

It is proper to observe that a system of public schools has two sides at least — the business side and the instructive side — distinct and yet allied in offensive and defensive operations. . . . In the smaller cities there may be a twofold use of the superintendent — a necessity to be deprecated; and as soon as possible the superintendent should be relieved of all mere business duties, except as advisory in matters which bring business and instruction into close relationship. . . .

Professor B. A. Hinsdale submitted to the National Education Association in 1888 a report on "The Business Side of City School Systems," which stated:²

Acting as a legislature, the board should establish three executive departments, defining their powers and duties:

- Department of Finance, Accounts, and Records;
- Department of Construction, Repairs, and Supplies;
- Department of Instruction and Discipline.

The heads of the departments might be called the auditor, the superintendent of construction, and the superintendent of schools. . . .

Until recently the training of superintendents has emphasized the strictly educational phases of their work and disregarded almost entirely the business aspects. Only

¹ *Proceedings of the National Education Association, 1883*, pages 70-71.

² *Ibid.*, 1888, pages 310-318.

8 BUSINESS ADMINISTRATION OF PUBLIC SCHOOLS

within the past few years have research workers become interested in the latter field. Even more recently have courses in school administration emphasized these two types of administrative duties.

ALL BRANCHES OF ADMINISTRATION FUNDAMENTALLY EDUCATIONAL

The tendency to regard some administrative problems as education and others as business or finance is fundamentally unsound. The planning and erecting of a school building, with the complicated procedures necessary, constitute an involved series of activities which may be considered primarily as business. But the very need that gives rise to the building activity is in itself educational. The building must be planned in all its details according to its educational use. Its equipment must meet the exacting requirements of a modern program of education. Even its financing must be planned so that future educational needs may be met in an adequate manner.

Again, the preparation of the school budget involves at every step a careful consideration of the educational needs of the district. The educational program, expressed in terms of activities to be carried on and children to be trained, determines the total amount of the estimates and the ratio of each major division to the budget as a whole. A budget that is built primarily for the business administration and only secondarily for the educational is likely to be faulty in some essential respects.

Finally, the purchase of supplies is primarily an educational matter. If supplies are selected because of considerations of economy rather than of educational use, they may be ill-adapted to the purposes for which they are intended. In fact, many supplies purchased for reasons other than their educational use represent sheer waste of public funds.

Every administrative problem, then, is at bottom educational. If it were not, it would not exist in a school system. An inseparable corollary is that every educational problem has somewhere a financial aspect. Even the failure of certain pupils to make satisfactory progress may be due to lack of funds for providing the organization and the teaching personnel necessary to give the proper treatment.

EDUCATIONAL ADMINISTRATION A NEW FIELD

Educational administration is a relatively new field. Until less than a century ago the school was a purely local affair, limited at most to the elementary school with a simple type of public secondary school. Public education in many states was supported solely for the children of paupers and for indentured servants. Problems of housing, of financing, and of teaching personnel were so simple that they were easily solved by the electors of the territory served or by a committee delegated to act for the group as a whole. It is not surprising, then, that there was no need for administrators or for a science of educational administration. Within the past twenty-five years, however, such a science has been developing: Technical studies have been made, magazine articles have been written, and books have been published. Already many important questions have been answered, and other problems are in the process of solution by scientific means.

This new field of educational administration needs a versatile type of executive. Since all school problems are fundamentally educational and since each has a financial aspect, the school executive must be a master of both phases of his work that he may secure the proper relationships among the various factors involved. He must be an educator to be able to administer the educational affairs of his school system; he must be a business man at the same time to secure

the necessary funds and to supervise their expenditure in the proper manner. He must also be a publicity man to secure and maintain the support of the public.

Modern psychology has disclosed the fact that training must be specific rather than general. This principle is of paramount importance in training school executives. It is followed religiously in the training for other professions: The medical student receives part of his training in the clinic and hospital; the law student not only studies by the "case method" but he also participates in a mock court. The educational administrator needs similar specific training in those activities that make up his work. This principle has been rather clearly defined for some time in the educational side of his training but only recently have we realized that the school administrator needs such specific training in the fields of financial accounting and reporting; purchasing and handling of supplies and equipment; acquisition, operation, and maintenance of the physical plant; raising of revenue; and numerous similar activities that are as truly functions of administration as is the supervision of instruction and child accounting.

More than ever before we are now analyzing our jobs to determine just what they embrace. We are studying intensively, evaluating, and attempting to determine the best of the various techniques that are involved in different kinds of work. On the basis of these studies we then plan the sort of training that will fit men to fill those positions adequately.

This book attempts to cover one important phase of the training of the modern school executive. It embraces an analysis of the principal business activities of boards of education and their executive officers in cities both large and small. This analysis is based on three sources of information: first, a list of business activities and practices compiled by the writer in checking over the rules and regulations of boards

of education in approximately one hundred cities located in different parts of the country; second, a compilation by Dr. Amos L. Heer based on a similar study;¹ and, third, the business activities listed in the monumental analysis of board minutes made by Dr. Hans C. Olsen.²

These activities are grouped under the following headings: School Budgetary Procedure, School Cost Accounting, Financial Reporting and Publicity, Pay-Roll Accounting, Operation of the School Plant, Maintenance of the School Plant, Insuring School Property, School Purchasing and Supply Accounting, Planning a School Building Program, Planning and Erecting a School Building, and Financing Programs of Capital Outlay.

The author does not attempt to draw a hard and fast line between educational activities and business activities, for no such line can be drawn. He aims rather to treat those activities that are usually recognized by boards and superintendents as business activities and that are not treated in the volumes devoted to the educational aspects of administration.

¹ Amos L. Heer, *Present Status of Business Executives in the Public Schools of the United States in Cities of 25,000 or More Inhabitants*. (Published by the author, Kent, Ohio; 1928.)

² Hans C. Olsen, *The Work of Boards of Education*. (Teachers College, Columbia University, New York; 1926.)

CHAPTER TWO

NATURE AND ORGANIZATION OF THE BOARD OF EDUCATION

IN the opening chapter the evolution of the control of the American public school system was traced from the period when the town meeting managed all the details of administering education to the present time when a board of education has delegated the administrative aspects of its work to paid executives, retaining to itself only the power to determine policies and to check up on the efficiency of its executive officers. True, not every board or committee in control of a system of public schools has the conception of its functions suggested here, but in general the tendency is in the direction indicated.

The present situation has been aptly summarized by Dr. E. P. Cubberley : ¹

The recent tendency in city school administration has been to increase the importance of the board of education as a legislative body, to decrease its importance as an executive body, and to centralize authority and responsibility in the hands of one or more well-trained and capable executive officers, with the city superintendent of schools as the directing and coördinating head of the executive organization.

Having secured this perspective, it is highly desirable to make further inquiry into the nature of the board itself — its size, methods of appointing its members, its organization, its functions, and the method of performing those functions. Many aspects of this subject have been given intensive scientific study, so that proper procedures in regard to them are positively known. In other cases analogies must be drawn from industry, or expert opinion must be consulted.

¹ Ellwood P. Cubberley, *Public School Administration*, page 83. (Houghton Mifflin Company, Boston; 1922.)

THE NATURE OF THE SCHOOL BOARD

Selection of school board members. The members of boards of education in American cities are selected by popular election, by appointment by some official — such as a mayor or a judge — or by election by the members of a city council or some other such board or commission. In a few cities these members, whether appointed or elected, must be chosen from definite wards or other political subdivisions of the city. Where board members are elected, they may be chosen on a partisan or a non-partisan ticket.

McGaughy classifies the methods of selecting board members into six divisions: (1) Appointment from wards, (2) appointment at large, (3) election from wards on a partisan ballot, (4) election from wards on a non-partisan ballot, (5) election at large on a partisan ballot, (6) election at large on a non-partisan ballot.¹ Table 1, adapted from his book, *The Fiscal Administration of City School Systems*,² shows methods used by the 377 cities with a population of eight thousand or more that reported in the inquiry conducted by the National Committee for the Chamber of Commerce Coöperation with the Public Schools.

Undoubtedly the most satisfactory method of selecting board members is election at large on a non-partisan ballot. Any method of selection from a specific district, as a ward, tends to make the board member a representative of that district rather than of the city as a whole. Consequently he is apt to gauge his actions by benefits accruing to his constituency rather than to the larger unit. The appointment of board members is an acceptable method when the officer responsible for the appointment is guided by a lofty sense of the importance of the work to be done by a school board

¹ James R. McGaughy, *The Fiscal Administration of City School Systems*, page 58. (The Macmillan Company, New York; 1924.)

² *Op. cit.*, pages 59–60.

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TABLE 1

NUMBER OF BOARDS OF EDUCATION CHOSEN BY EACH OF THE
VARIOUS METHODS

METHOD	NUMBER OF BOARDS	PER CENT OF BOARDS
Appointed boards		
Appointed by wards	12	3.2
Appointed at large	65	17.2
Total appointed boards	77	20.4
Elected boards		
Elected by wards		
On partisan ballot	19	5.0
On non-partisan ballot	30	8.0
Total	49	13.0
Elected at large		
On partisan ballot	54	14.3
On non-partisan ballot	197	52.3
Total	251	66.6
Total elected boards	300	79.6
Elected boards		
Elected annually	156	41.5
Elected biennially	136	36.1
Elected once in three years	1	.2
Elected once in four years	6	1.6
No report	1	.2
Total elected boards	300	79.6

member. Unfortunately there is no universal guarantee of such an attitude. The election of board members on a partisan ballot tends always to raise the question of party affiliation rather than of fitness for office. Undoubtedly, American cities tend to favor the plan of electing school board members at large on a non-partisan ballot.

Size of boards. The unmistakable tendency in American cities is toward smaller boards. Experience with a large board has demonstrated that it is likely to be unwieldy. Its

members are able to shift responsibility much more easily than are the members of a small board. A large board, according to Theisen, tends to have more committees than does a smaller board.¹ This means that committee action is frequently substituted for board action, since the board usually adopts the report of a committee without modification — frequently without discussion. Furthermore, a large board is much more likely to be split into factions and cliques than is a small one. Finally, there is a feeling both in school and municipal administration that a small body seated around a table is much more effective in its functioning than is a larger body that cannot be so assembled.

The following table shows the frequency of various sizes of school boards in cities of more than one hundred thousand.²

TABLE 2

SIZE OF SCHOOL BOARDS IN CITIES ABOVE 100,000 IN POPULATION

NUMBER OF BOARD MEMBERS	FREQUENCY
0	1
3	1
5	11
6	3
7	21
9	11
10	1
11	2
12	2
15	3
Total	56

From this table it is seen that the board of median size for the larger cities contains seven members. The facts for cities of

¹ W. W. Theisen, *The City Superintendent and the Board of Education*, page 37. (Teachers College, Columbia University, New York; 1917.)

² Walter S. Deffenbaugh, *Certain Practices in City School Administration* (*City School Leaflet* No. 29 of the United States Bureau of Education), page 2. (Government Printing Office, Washington; 1927.)

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between thirty thousand and one hundred thousand population are as follows:¹

TABLE 3

SIZE OF SCHOOL BOARDS IN CITIES OF 30,000 to 100,000 POPULATION

NUMBER OF MEMBERS	FREQUENCY
0	1
3	7
4	1
5	37
6	8
7	27
8	6
9	33
10	6
11	3
12	2
13	3
14	2
15	1
16	1
19	1
Total	139

Here again the median size of boards is seven members, showing that, of the cities above thirty thousand, as many have boards of education with fewer than seven members as with more than that number. For 516 cities ranging in population from five thousand to thirty thousand Deffenbaugh shows in a recent study that the median-size board is six members; the range is from three to eighteen with but 4.8 per cent having more than nine members.

Table 4 shows the size of school boards in 1902 and 1927 in cities that had, in 1920, populations of two hundred fifty thousand or more. The data for 1902 are taken from a publication by Dr. Rollins;² and the data for 1927 from

¹ *Op. cit.*, page 2.

² Frank Rollins, *School Administration in Municipal Government*, page 24. (The Macmillan Company, New York; 1902.)

Deffenbaugh's study.¹ In this period only four cities had increased the size of their boards — in one case by only one member, in a second case by two members, in the third by three members, and in the fourth by five members. On the

TABLE 4

SIZE OF BOARDS OF EDUCATION IN 1902 AND IN 1927 IN AMERICAN CITIES
HAVING, IN 1920, POPULATIONS OF 250,000 OR MORE

CITY	SIZE OF BOARD IN 1902	SIZE OF BOARD IN 1927
New York	46	7
Chicago	21	11
Philadelphia	42	15
Detroit	17	7
St. Louis	12	12
Cleveland	7	7
Boston	24	5
Baltimore	9	9
Pittsburgh	39	15
Los Angeles	9	7
San Francisco	4	7
Buffalo	0	5
Milwaukee	23	15
Newark	30	9
Cincinnati	31	7
New Orleans	20	5
Minneapolis	7	7
Kansas City	6	6
Seattle	5	5
Indianapolis	5	5
Jersey City	13	9
Rochester	5	5
Portland	5	5
Denver	6	7
Washington	7	9
Average	15.7	7.7

¹ *Op. cit.*, pages 2-3.

other hand, twelve cities had actually decreased the size of their boards, while nine had made no change. The decrease ranged from a change of 2 in Los Angeles to one of 24 in Cincinnati, one of 27 in Philadelphia, and one of 39 in New York City! The average size of boards had decreased from 15.7 in 1902 to 7.7 in 1927.

Tenure of school board members. McGaughy found a variation of from one year to life in the length of term for which school board members are elected. The most usual term is for three years, though in cities above one hundred thousand the median term is four years. In 9 per cent of the 377 cities studied the term is two years; but about one out of every seven cities selects members for terms of six years or more. It is interesting to note that the median length of term is greatest where board members are elected at large.

Qualities desirable in a school board member. It would be impertinent to close this section without some reference to the type of citizen that makes a desirable board member. After all, it is not alone the size of the board, the method of selecting its members, or the length of tenure that makes or mars the board's work; it is the human qualities possessed by the members. The set-up that lacks the proper human factors is doomed to failure. It is in point, then, to suggest the type of man needed for such service. We quote from Dr. John K. Norton, who has so aptly stated the qualifications to be desired:¹

A school board member should be both honest and intelligent. He should have an active interest in the public schools and a desire to improve their effectiveness. He should have sufficient vision so that he may offer real help in the formulation of the city's educational policies. He should have sufficient common sense, however, to recognize that it is not his duty actually to put these policies into

¹ John K. Norton, *A Handbook of Major Educational Issues* (Research Bulletin, Vol. 4, No. 4), page 219. (National Education Association, Washington; 1926. Used by permission.)

execution. The policy which the school board member determines should be turned over for execution to technically trained educational experts working full time and having complete training for this type of work.

INDUSTRIAL ORGANIZATION

Industry, organized for service and profit, has long since been compelled to adopt the most efficient type of organization it can find — one that will secure the best results in output, in sales, and in returns on the capital invested. As a result of competition, necessitating low costs and superior products, the industrial world has come to accept certain principles as fundamental and certain types of organization as most desirable. The general acceptance of these in industry has preceded such acceptance in education because the processes of social evolution, which control to a great extent changes in educational organization, are slower than the processes of industrial evolution.

Principles of industrial organization. Organization in industry is variously defined. Knoeppel probably states the situation as comprehensively as it can be stated in brief compass. He says that "organization is the proper adjustment of the relationships between human beings in an effort to accomplish certain definite ends."¹ Here is a recognition of aims and an admission of the necessity of the proper relationships among the human factors involved.

To the consideration of industrial organizations there are obviously two aspects; these Lansburgh designates as "primary fundamentals and operating fundamentals."² His statement follows:

The primary fundamentals are fourfold: (1) Regard for the aim of the enterprise; (2) the establishment of definite lines of supervision; (3) the placing of fixed responsibility; (4) regard for the

¹ Charles E. Knoeppel, "Laws of Industrial Organization," *Industrial Management*: Vol. 58, page 266 (October, 1919).

² Richard H. Lansburgh, *Industrial Management*, page 39. (John Wiley and Sons, New York; 1923.)

personal equation. The operating fundamentals . . . are four in number also. They are (1) the development of adequate systems; (2) the establishment of adequate records; (3) the laying down of proper operating rules and regulations; and (4) the exercise of good executive control.

It is obvious that the primary fundamentals concern the structure of an organization, and the operating fundamentals its functioning. A few brief statements will serve to reveal the importance of each principle set forth above.

The first fundamental cited, the aim of an enterprise, determines both the type of organization and its operation. An organization designed to produce and sell washing machines will be different from the one designed to produce and market soap or breakfast food.

The second fundamental, the establishment of definite lines of supervision, provides for the flow of authority throughout the organization from the chief executive so that each person will know his function and there will be no overlapping of authority.

The third principle, the placing of fixed responsibility, is a necessary corollary to the second.

The fourth principle takes into consideration the human factors involved. This implies a regard for the fitness of each individual for the work which may be assigned to him. However otherwise ideal any desired plan may seem, it must have due regard for the personnel which will compose it.

The first of the operating fundamentals — those that directly affect the functioning of the organization — follows immediately upon the primary fundamentals. Each unit of the organization must be so placed that it contributes to the smooth operation of the system toward the achievement of its aim, whether that unit be a person, a plan, or a machine. The term *system* is aptly used here to convey the meaning desired.

BOND & STOCKHOLDERS

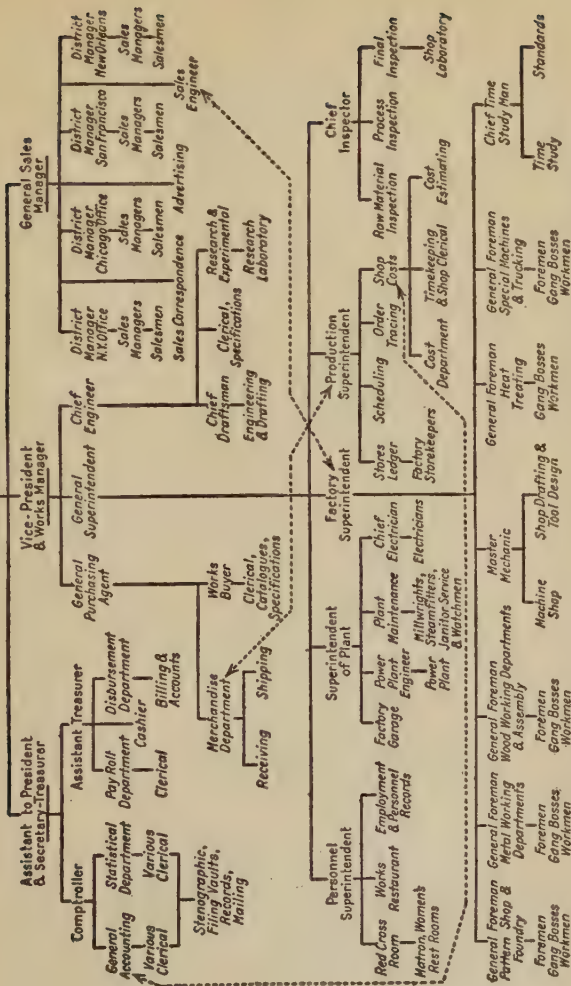


Fig. 1. Typical general organization chart of a large metal and woodworking factory.

The establishment of adequate records is necessary to reveal present conditions and to make them available for study in the light of past conditions. Without such records an organization would function only with difficulty; but, on the other hand, the mere keeping of records must never be an end in itself.

The third operating fundamental, the laying down of proper rules and regulations, is necessary to make the position and function of each unit in the organization absolutely clear and definite. Where authority is to be delegated, that is made clear by the proper rules and regulations. Where a certain function is to be performed by an individual, that is made equally clear and definite.

Good executive control, the fourth operating fundamental, implies a chief executive whose duties include formulating policies, developing an organization to carry them out, and setting up the proper supervisory control to see that the policies are properly executed by the organization.

Typical industrial organizations. Wide variations are found in industrial organizations even though there may be strict compliance with all the principles just set forth. Both the size of the organization and the type of work being done by it will operate to influence the form of organization adopted by it. A building contractor who has a number of buildings under construction has general superintendents, with foremen under them, in charge of his various projects. A manufacturer who is producing some commodity has a finance, a production, and a sales organization, each headed by executives who may know little or nothing about the work of the other executives. Organization charts of typical enterprises are given here to show actual situations in industrial organizations.

Figure 1, taken from Alford's *Management's Handbook*,¹

¹ Leon P. Alford, *Management's Handbook*, page 1255. (Ronald Press Company, New York; 1924. Used by permission.)

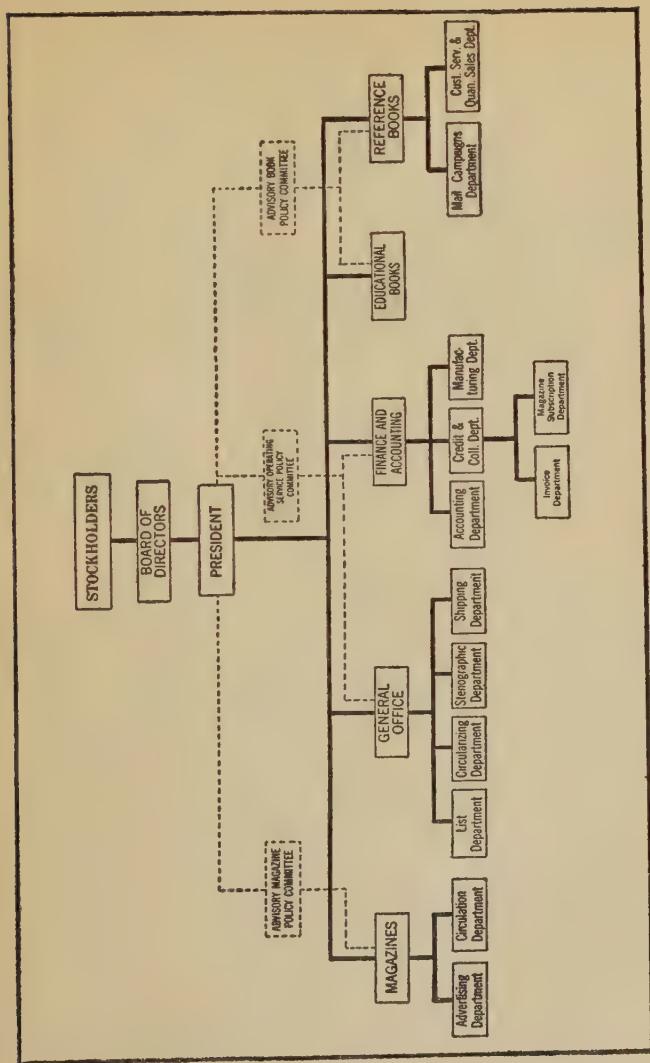


FIG. 2. Line and committee organization chart.

shows the typical general organization of a large metal and woodworking factory with a total personnel of about three thousand, comparable in size to a large city school system. The three aspects of financing, operating, and selling are under one executive whose duty it is to direct all departments so that profits will accrue to the stockholders and service will be given to the public.

Figure 2¹ shows the organization of the Ronald Press Company, a large publishing concern in New York City. Here again the chief executive officer is responsible for securing results satisfactory to the board of directors and the stockholders. It will be noted that there exist three committees whose relationships with one another and with the other elements of the organization are shown by dotted lines. It is significant that these committees are purely advisory and in no sense administrative.

SCHOOL BOARD ORGANIZATION

Typical organizations for educational administration. The effectiveness with which a school organization functions is dependent in no small measure on the recognition of the fundamental principles accepted in industry. There must be, in general, a conscious recognition of purpose or aim, a clear formulation of policies to realize those aims, the proper administrative organization for the execution of those policies, and a constant checking of results against aims and purposes.

A failure to recognize any one or all of these fundamentals may cause inefficiency and waste. There is too often an assumption that a purpose exists, without any clear statement of that purpose. Frequently there is in the formulation of policies a woeful lack of definiteness which may result from a failure to recognize the necessity of having an aim or purpose in mind. Again, the administrative organization may be

¹ *Op. cit.*, page 1257.

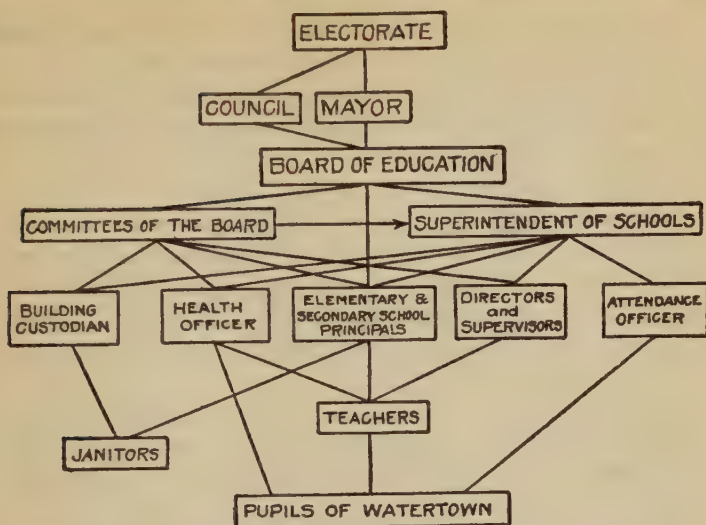


FIG. 3. The plan of organization found in Watertown, New York.

bad. It may be lacking in definiteness of function; there may be among board committees and executive officers a confusing overlapping of work, which will lessen a consistent drive toward the realization of the aims of the schools through the proper execution of its policies; or there may be a continual shifting of responsibility among the executive officers unless their functions are perfectly clear and well defined. Also, the balancing of results against aims may be neglected to such an extent that the need for well-defined policies and their careful execution may be entirely overlooked.

A few typical organizations are outlined here. Where changes seem desirable, suggestions are given for their improvement. Figure 3, reproduced from the *Report of the Survey of the Schools of Watertown, New York*,¹ shows a situa-

¹ George D. Strayer and others, *Report of the Survey of the Schools of Watertown, New York* (School Year 1924-1925). (Teachers College, Columbia University, New York; 1925. Used by permission.)

tion where the school board committees actually performed administrative duties and were in that respect coördinate with the superintendent of schools. These committees actually dealt directly with principals, custodians, supervisors, and health officers.

Figure 4, reproduced from the same report,¹ shows the relationships that should exist between the board of education and the superintendent of schools. The superintendent here becomes the chief executive officer of the board with all other members of the organization directly or indirectly responsible to him, and through him alone to the board of education and the electorate.

Incidentally, the Watertown report recommended the substitution of a board of education elected by the people for one appointed by the mayor with the approval of the common council.

Figure 5 shows the organization found in Providence, Rhode Island, by the Survey Staff of Teachers College, Columbia University.² A number of weaknesses are evident. The board, a large one elected by wards, has nineteen standing committees. The superintendent of schools is rather an inconspicuous member of this organization, subject directly to the legislative committee but having no control over purchasing or the administration of the school plant. The health department of the city looks after the health of the school children, and the public building department of the city is responsible for the school property. It is impossible to conceive a form of organization that would be more cumbersome in functioning or one that could be much less effective in accomplishing those things that a school board should accomplish.

¹ *Op. cit.*, page 25.

² George D. Strayer and others, *Report of the Survey of Certain Aspects of the Public School System of Providence, Rhode Island*, page 8. (Teachers College, Columbia University, New York; 1924. Used by permission.)

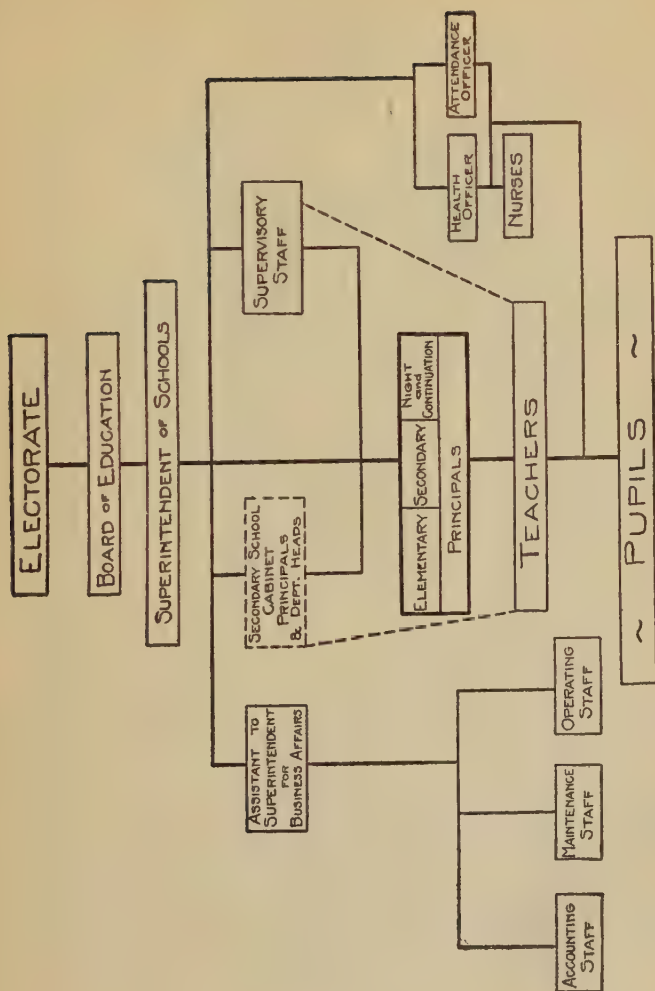


FIG. 4. The plan of organization proposed for Watertown, New York.

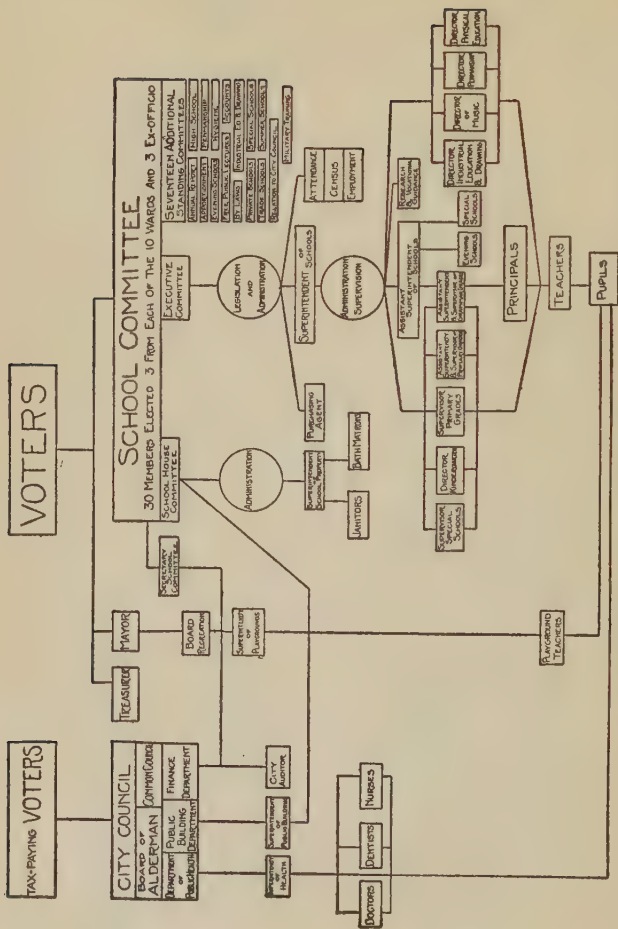


Fig. 5. The organization of public education in Providence, Rhode Island.

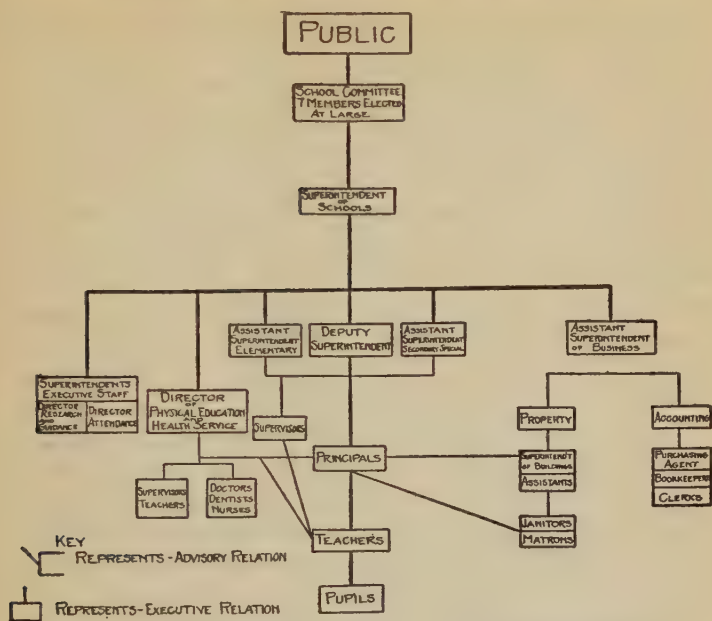


FIG. 6. The organization proposed for Providence, Rhode Island.

Figure 6 shows the proposed organization for Providence.¹ Here the large board whose members were largely elected by wards is replaced by a board of seven members elected at large. The cumbersome committee system has been junked, the school plant is placed under the direction of the board of education, and the school health officers are under the control of the board and its officers. Finally, the superintendent of schools is the chief executive officer of the board. The assistant superintendents in charge of instruction and business are subject to him, and through him to the board.

¹ *Op. cit.*, page 28.

Organization recommended by the National Education Association. Figure 7, reproduced from a *Research Bulletin* of the National Education Association,¹ shows the type of administrative organization suggested by that body. Several points are worthy of mention here and of extended discussion later: The administration of the school system is centered in one officer — the superintendent of schools; the board of education does not have standing committees; the line of authority from the board through the superintendent to teachers and pupils is direct and clearly defined; and each officer and individual has his place in the set-up clearly indicated. This plan is also unique in that it differentiates between “direct authority” and “supervisory control.”

The unit and the multiple types of administrative organization. In a preceding section of this treatise it was indicated that the professional aspects of supervision and administration resulted in the appointment of a city school superintendent. For a time the school board continued to handle the business activities, but with their increasing complexity and scope there was a tendency to delegate them either to a paid secretary, a business manager, or a business executive hired specifically for that purpose. Sometimes, notably in the cases of Cleveland, Philadelphia, and Boston, that officer preceded the city superintendent of schools. In some instances the business executive has been made subordinate to the superintendent of schools, and in others he is responsible directly to the board and in no manner accountable to the board's executive in charge of the education department.

The plans for administrative control of cities may be classified in two groups — the unit type and the multiple type. In the unit type, the administration of the school system is

¹ John K. Norton, *A Handbook of Major Educational Issues (Research Bulletin, Vol. 4, No. 4)*, page 193. (National Education Association, Washington; 1926. Used by permission.)

vested in one chief executive officer known as the superintendent of schools. In the multiple type, the administration of the school system is vested in two or more coördinate executive officers each responsible directly to the board of education. The executive officers other than the superintendent of schools are variously known as business manager, business executive, business agent, and secretary of the board — the functions of which official differ from those usually pertaining to the secretary of a corporation.

Dr. A. L. Heer in a recent study classifies unit-type cities still further into three groups: “the unit-chief-executive type, in which all of the business affairs are administered by one business executive; the unit-major-executive type, in which all of the business affairs are administered by two or more business executives; and the unit-minor-executive type, in which only a part of the business affairs are administered by a business executive or executives.”¹

He recognizes two general types of organization in cities not unit in type; for example, the dual, “in which all of the business affairs are administered by one business executive who is coördinate with the superintendent of schools”; and the multiple, “in which the business affairs are administered by two or more business executives who are coördinate with the superintendent of schools.”

The latter type Dr. Heer divides further into the multiple-major-executive type “in which all of the business affairs are administered by two or more coördinate business executives”; and the multiple-minor-executive type, “in which only a part of the business affairs are administered by a business executive or executives coördinate with the superintendent of schools.”

¹ Amos L. Heer, *The Present Status of Business Executives in the Public Schools of the United States in Cities of 25,000 or More Inhabitants*, Chapter I. (Published by the author, Kent, Ohio; 1928. Used by permission.)

The following outline clearly shows Dr. Heer's scheme :

1. Unit type
 - (a) Chief-executive
 - (b) Major-executive
 - (c) Minor-executive
2. Dual type
3. Multiple type
 - (a) Major-executive
 - (b) Minor-executive

A subsequent chapter will include a careful study, from several different points of view, of the functioning of these types.

A series of excerpts from by-laws of boards of education, designed to show the two general types of organization, unit and multiple, are given here. Figures accompany some of these to make the relationships clearer.

The 1924 Rules and Regulations of the Board of Education of Detroit, Michigan, a unit-type city, made provision for the following organization, which illustrates the unit-chief-executive type of Dr. Heer's classification :

SEC. II. SUPERINTENDENT

The Superintendent of Schools shall be the executive officer of the Board of Education. . . .

He alone shall be directly responsible to the Board of Education for the efficient operation of all school functions of the Board of Education.

SEC. III. BUSINESS MANAGER

The Business Manager shall be the secretary of the Board and shall be directly responsible to and under the direction of the Superintendent of Schools for the efficient construction, maintenance, and operation of buildings; purchase, storage, and distribution of supplies; and auditing and insuring of school property.

SEC. IV. SUPERVISOR OF PROPERTIES

The Supervisor of Properties shall be directly responsible to the Business Manager of this Board for the maintenance, repair, and alterations to school property. . . .

SEC. V. SUPERVISING ENGINEER

The Supervising Engineer shall be directly responsible to the Business Manager of this Board for the maintenance and operation of the heating and ventilating plants and all mechanical and electrical equipment of the various schools, and for the cleaning of the various buildings. . . .

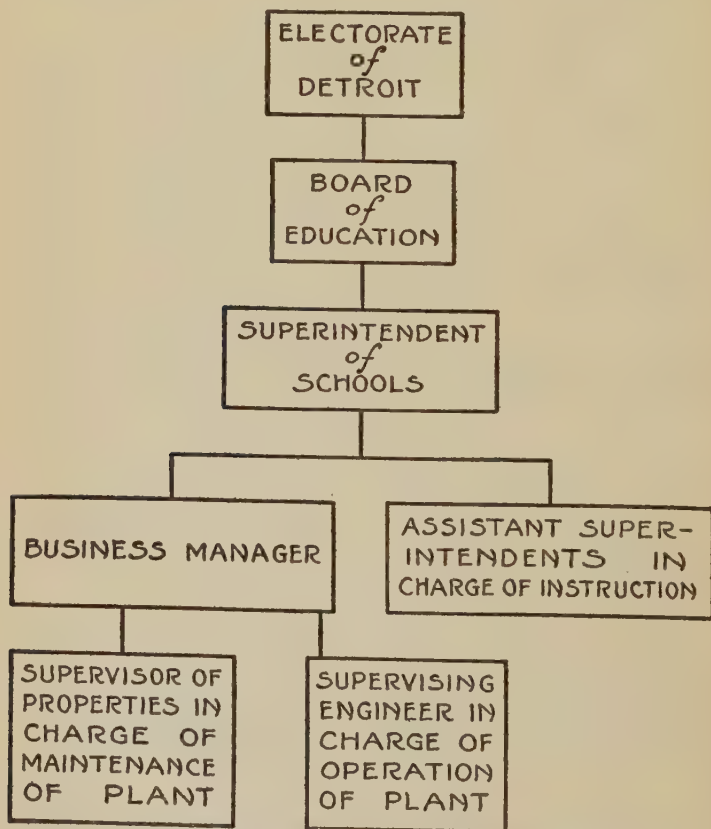


FIG. 8. Administrative organization of the Board of Education of Detroit, Michigan, a unit-type city.

The relationships between elements in the Detroit organization are shown in simple graphical form in Figure 8.

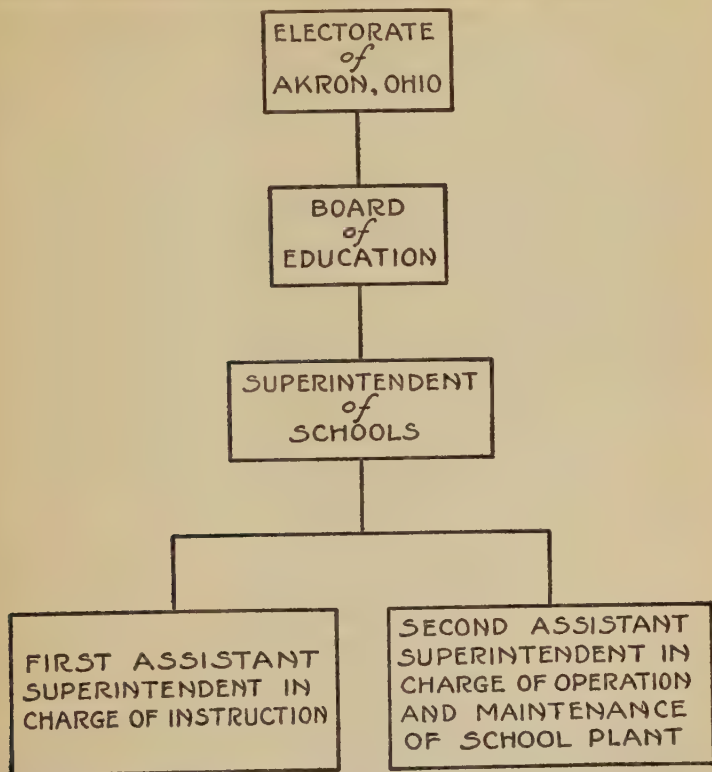


FIG. 9. Administrative organization of the Board of Education of Akron, Ohio, a unit-type city.

The Rules and Regulations of the Akron, Ohio, Board of Education for 1924 also provided for the unit-chief-executive type. Figure 9 illustrates graphically the following plan of organization:

The Superintendent of Schools shall be the executive officer of the Board of Education and under its direction.

He shall be directly responsible to the Board of Education for the efficient operation of all school functions of the Board of Education.

He shall have the sole power to nominate and to assign, transfer, promote, and demote or suspend all assistant superintendents, supervisors, principals, teachers, and other employees of the Board of Education hereinafter provided. . . .

The Assistant Superintendents of Schools shall be directly responsible to the Superintendent of Schools.

The First Assistant Superintendent shall have supervision of the junior and senior high school grades and shall perform such other duties as shall be assigned to him from time to time by the Superintendent of Schools.

The Second Assistant Superintendent of Schools shall be responsible for the efficient administration of the alteration, construction, repair, maintenance, and operation of all buildings, and shall be custodian of all school property. . . .

The Rules and Regulations of the Board of Education of

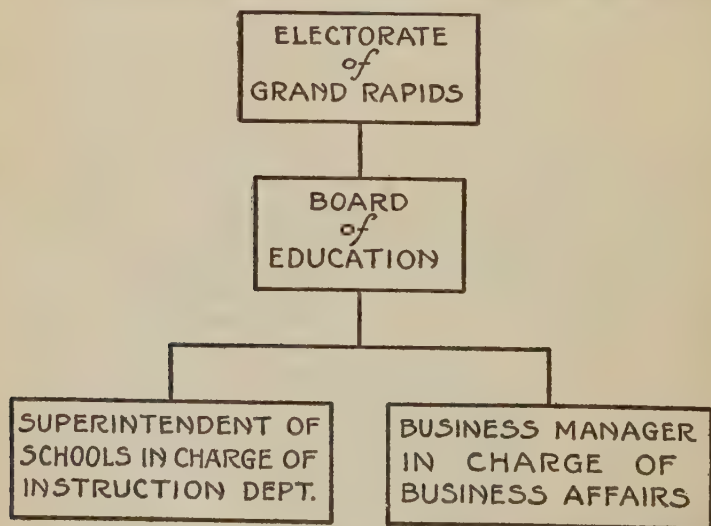


FIG. 10. Administrative organization of the Board of Education of Grand Rapids, Michigan, a multiple-type city.

Grand Rapids, Michigan, revised to 1924, have the following provision for an organization of Dr. Heer's second type:

The affairs of the Board of Education shall be administered by two general departments known respectively as the educational department and the business department.

Figure 10 shows in graphical form the relationship between these departments.

The Rules and Regulations of the St. Joseph, Missouri, Board of Education contain the following very interesting regulation, which was adopted in April, 1916:

The administration of the school affairs of the School District of the City of St. Joseph shall be divided into three departments — namely, (1) education, (2) finance, (3) maintenance — at the heads of which shall be respectively the Superintendent of Schools, the Secretary and Business Agent, and the Chief Engineer.

This set-up illustrates Dr. Heer's multiple-major-executive type, which is illustrated graphically in Figure 11.

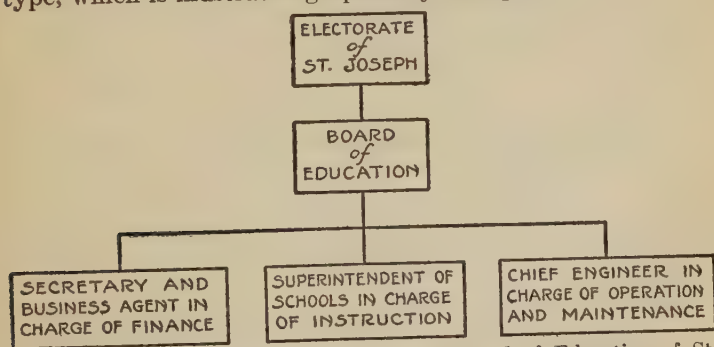


FIG. 11. Administrative organization of the Board of Education of St. Joseph, Missouri, a multiple-type city.

The following regulations, amended to 1924, are those under which the Boston Board of Education operates:

SEC. 55. (1) The Superintendent shall be the executive officer of the Board in all matters relating to instruction and discipline in the schools.

SEC. 90. (1) The Business Agent shall be the executive officer of the Board in charge of accounts; receipt of income; preparation of pay rolls; purchase, storage, and distribution of supplies, including printing, postage, and the transportation of pupils.

SEC. 97. (1) He shall keep a careful oversight of all expenditures and all costs, and shall call the attention of the Board to any expense which may seem to him unnecessary, wasteful, or in excess of proper requirements.

SEC. 115. (1) The Schoolhouse Custodian shall be the executive officer of the Board in all matters relating to the care and custody of land and buildings used for school purposes.

Still other cases might be cited showing more than three independent coördinate officers. The St. Louis city charter provides for four such officials and is of the multiple-minor-executive type.¹ The cases cited, however, adequately illustrate the methods of organization used by communities in their various endeavors to accomplish the same end — the education of children for citizenship in a democracy.

Some state school codes provide specifically for one type or the other. The fact that there is such a statutory provision, however, does not always imply strict compliance with the law.

The New York school law makes the following definite provisions for the unit type of organization:²

§ 870. *Powers and duties of Superintendent of Schools.* The Superintendent of Schools of a city shall possess, subject to the by-laws of the Board of Education, the following powers and be charged with the following duties:

(1) . . . To be the chief executive officer of such Board of Education and the educational system, and to have a seat in the Board of Education and the right to speak on all matters before the Board but not the right to vote.

¹ Charles H. Judd and others, *Survey of the St. Louis Public Schools: Part I*, pages 48-80. (World Book Company, Yonkers-on-Hudson, New York; 1918.)

² *New York Education Law as Amended to July 1, 1928*, pages 256-257. (The University of the State of New York, Albany.)

(4) To have supervision and direction of associate, district, and other superintendents, directors, supervisors, principals, teachers, lecturers, medical inspectors, nurses, auditors, attendance officers, janitors, and other persons employed in the management of the schools or the other educational activities of the city authorized by this chapter and under the direction and management of the Board of Education.

The Pennsylvania school law, on the other hand, has the following provision which makes legal a multiple type of administrative control:¹

§ 318. He [the secretary of the board of school directors] shall have general supervision of all the business affairs of the school district, subject to the instructions and directions of the board of school directors.

The New Jersey school code makes optional with a board of education the appointment of a business manager who shall have a seat in the board and the right to speak, but not the right to vote. This makes it possible for any New Jersey city to have at least two executive officers who are coördinate. The law further makes the following provision:²

§ 91. (71) The Business Manager shall have charge and care of the public school buildings and all other property belonging to the school district. . . .

§ 92. (72) All plans and specifications for the erection, improvement, or repair of public schoolhouses shall be drawn by or under the supervision of the Business Manager, if there be one, and shall be approved by the Board of Education; said Business Manager, if there be one, shall supervise the construction and repair of all school buildings. . . .

It will thus be seen that there are two practices among boards of education, and two distinct attitudes taken by state legislatures. It may not be out of place to suggest that

¹ *Pennsylvania School Law and Appendix, 1925*, page 23. (Department of Public Instruction, Harrisburg.)

² *New Jersey School Laws, 1925*, pages 46-47. (State Board of Education, Trenton.)

in Massachusetts and New York, where the early development of education as a state function took place, unity of administration is the order of the day; whereas in Pennsylvania and New Jersey, where the development was slower and where the parochial and pauper school conceptions so long held sway, the administration is largely a divided one. The ultimate solution of this problem will be one of the interesting developments of the future.

CHAPTER THREE

THE WORK OF THE BOARD OF EDUCATION

FUNCTIONS OF BOARDS OF EDUCATION

THE board in control of school affairs, consisting of representative citizens elected or appointed for varying terms, is usually defined by statute as a body corporate. This means that authority and responsibility are located in the board as a whole and not in the members of that board as individuals. No one member of a board can bind that body by word or action unless it has in its corporate capacity designated that member its agent for such a purpose. Dr. E. P. Cubberley makes this principle very clear in the following language: ¹

Boards for control in our cities today, as the successors of the town or district meeting, now represent the people in the matter of schools, and through such boards the people now exercise control over the education provided at public expense for their children. The school board members are merely citizens, selected as their representatives by the people of the community. As individuals they are still citizens; only when the board is in formal session do they have any actual authority.

It is the board, acting as a body, which in the name of the people controls the schools, and not the individual members who, when in session, compose it. Even when the board is in formal session, the individual members have only a voice and a vote, and their control over the schools is through the votes whereby rules, regulations, and policies are adopted. To have authority otherwise, the authority must be expressly delegated to a member by the board as a body, and by vote, and his authority then extends only so far as specified by such vote of the board.

Throughout the evolution of school control there has been a continual delegation of authority first from the community as

¹ Ellwood P. Cubberley, *Public School Administration*, pages 109-110. (Houghton Mifflin Company, Boston; 1922.)

a whole to a small group designated to represent it, and, in turn, by this representative board to its executive officers. The present tendency is clearly in the direction of the application of the principles of good industrial organization, where a board of directors, representing the stockholders as a whole, designates a chief executive who is held responsible for results; the board of directors confines its activities to the determination of policies and to checking results.

Dr. Ayres in the Cleveland survey report states this relationship in an admirable manner: ¹

✓ Boards of education exist for the purpose of getting public schools managed; not for the purpose of managing the schools themselves. Their work is to get things done rather than to do them.

Again in the same report he reiterates this principle: ²

The board should decide what it wants to have done, select people to do these things, study results to see how they are being done, and keep the public informed about the problems faced and the progress made.

Dr. Cubberley states the same principle: ³

The principles of good corporation organization need to be applied to educational affairs, and boards of school directors need to assume more the position of a board of directors for a large corporation, giving to their executive officers the authority which corporation directors give to their presidents and superintendents. The proper functions of the board of directors are to supply funds, to supervise expenditures, and to determine what additions to the plant or extensions of the business are to be undertaken. As long as the business prospers, the board should leave the details of employment and management to the president and heads of departments; when the business ceases to prosper, they should either change their business methods or change their executive heads.

¹ Leonard P. Ayres, *School Organization and Administration*, page 15. (Russell Sage Foundation, New York; 1916.)

² *Op. cit.*, page 122.

³ Ellwood P. Cubberley and others, *The Portland Survey*, pages 32-33. (World Book Company, Yonkers-on-Hudson, New York; 1916.)

These statements are a far cry from the town meeting that controlled all aspects of the school, or even from the school committee or early board of school directors that managed, through committees and individual members, every detail of the administration of the schools under its control.

Dr. Theisen made a careful analysis of the rules and regulations of boards of education in one hundred cities.¹ From these he generalized nineteen duties which he asked several hundred judges to rank in order of importance. These judges were business men, educators, and members of professions. As a result of this analysis we have the following duties appearing in the order of their importance according to the composite ranking of the judges :

1. Select the chief executive officer and support him in the discharge of his duties.

2. Pass upon the annual budget for maintenance prepared by the chief executive and his assistants. ("Budget includes sources and amount of revenue available, as well as expenditures.")

3. Debate and pass upon recommendations of chief executive for additional capital outlays — buildings, sites, and improvements — and determine the means of financing such outlays, as by bonds or loans.

4. Advise with the chief executive, affording a group judgment, on his recommendations for extensions or readjustments of the scope of educational activities.

5. Appoint, upon nomination and recommendation of the chief executive, teachers, principals, and supervisors.

6. Determine, after consultation and discussion with the chief executive, the schedule of salaries.

7. Require and consider report of the business transacted or pending, and of the financial status of the system.

8. Require and discuss report of the chief executive concerning progress of the schools — in terms of achievements of pupils, teachers, and supervisors.

¹ W. W. Theisen, *The City Superintendent and the Board of Education*, pages 1-32. (Teachers College, Columbia University, New York; 1917. Used by permission.)

9. Adopt, upon consultation with the chief executive, a set of by-laws or rules for the government of the school system; that is, designate authority of executive and administrative officers, and duties to be performed by the board or its committees.

10. Pass upon architect's plans, approved by the chief executive and his assistants, for buildings that have been authorized.

11. Represent needs of the schools before city authorities or the legislature.

12. Approve the list of bills for expenditure previously authorized and approved by executive officers.

13. Consider recommendations of executive officers on legal matters, decide steps to be taken in such matters as suits to quiet title and condemnation proceedings.

14. Approve textbooks selected by the chief executive and approve courses of study recommended by him.

15. Represent needs of the schools before the public through such media as the press and platform.

16. Serve as laymen, ready — even after retiring from the board — to champion school needs and to further public support of the schools as others champion good streets and parks.

17. Act as a court of final appeal for teachers, supervisors, and patrons in cases that the superintendent has not been able to dispose of or that may be appealed from his decision.

18. Hear communications, written or oral, from citizens or organizations on matters of administration or policy.

19. Visit the schools to observe and investigate the efficiency of instruction.

The most important function any board of education can perform is to "select the chief executive officer and support him in the discharge of his duties." Next in importance are the adoption of that chief executive officer's budget; the discussion of and acting upon his recommendations for additional capital outlays and for readjustments and extensions of the scope of educational activities; and finally, the appointing of members of the staff on his recommendation. In contrast with these very important duties we find such duties as representing the needs of the school before the public, serving as laymen ready to champion school needs, act-

ing as a court of appeal, hearing communications, and visiting the schools to observe and investigate the efficiency of instruction.

It is clear that the board of education is primarily a legislative body, depending on its chief executive officer to initiate the important activities. It reserves the right to discuss his recommendations and to adopt, or refuse to adopt, his policies.

VARIOUS PRINCIPLES OF SCHOOL BOARD FUNCTIONING

Superintendent J. W. Studebaker has set forth the basic principles of school board organization in the following admirable statement :¹

If the people of our respective communities are to be insured against the evils of inefficiency with its concomitants, wastefulness and exploitation of material resources and child life; if they are to have the largest assurance of a constant, effective program of education which provides well-balanced aims, policies, and operating methods; and if they are to secure complete, regular, and scientific measures of the results of their systems of schools, the following basic principles of organization must be recognized and adopted :

1. The board of education should be organized as a board without standing committees and with each member on an equal basis with every other member, except as provided otherwise by law, in degree of responsibility for action.

2. The chief duty of the board is legislation.

3. The superintendent of schools should be the chief executive officer of the school system and be directly responsible to the board for the execution of its policies.

4. The executive work of the school system should be divided into several departments corresponding in general to those departments represented in each school, all department heads being directly responsible to the superintendent of schools, their regular duties apart from those required by law assigned and supervised by him; and they and all other school employees, except auditors

¹ J. W. Studebaker, "School Board Organization and the Superintendent," *American School Board Journal*: Vol. 68, No. 4, page 37 (April, 1924).

and attorneys, should be elected to positions by the board of education only upon nomination by the superintendent.

5. The superintendent should be held responsible by the board not only for the management and operation of the work in each of the several departments throughout the system, but also for placing before the board facts, comparisons, investigations, and reports, and making available to the board the advice on special and technical matters, aside from legal questions, of those persons who, in his opinion or that of the board, are particularly qualified to furnish it so that the board will be able to reach sound judgments in establishing policies and approving those matters which under the existing laws must come before the board for action.

Dr. George D. Strayer, eminent student of educational administration, makes these suggestions in the report of the survey of the public schools of Springfield, Massachusetts, which was conducted under his supervision :¹

1. That the school committee² act as a committee of the whole in considering and passing upon the program and particular recommendations of the superintendent of schools, and that all standing committees be abolished.

2. That the school committee provide, by its own rules, that the adoption of textbooks and of courses of study be on the recommendation of the superintendent of schools, and that it require that he indicate in making his recommendations the degree of coöperation which he has received from his assistants and associates of the administrative, supervisory, and teaching staff.

3. That the school committee require that the superintendent of schools report from time to time concerning the achievements and progress of the school system in terms of (a) the adequacy of the attendance service; (b) the progress of children in the school system, involving studies of retardation and elimination; (c) the adequacy of the adjustment of the school system to the needs of children in terms of the school organization, the classification of

¹ George D. Strayer and others, *Report of the Survey of Certain Aspects of the Public School System of Springfield, Massachusetts* (School Year 1923-1924), pages 31-32. (Teachers College, Columbia University, New York. Used by permission.)

² "School committee" has here the same connotation as has "school board" elsewhere.

pupils, the courses of study, the organization of special classes, and the like.

4. That the school committee require the superintendent of schools to submit annually a budget showing the estimated revenue available, or to be made available, if the tax rate is fixed by the school committee, together with the program of work to be accomplished and the estimated costs by divisions and activities of the school system; that such budgetary estimates be based upon an analysis of costs by divisions of the school system and by units of the school organization for one or more previous years; that such budgetary estimates include a salary schedule based upon principles which can be applied uniformly throughout the school system, and that such estimates include as a special item a report on the present condition of the school plant with reference to the need for repairs, reconstruction, or replacement of equipment.

5. That the school committee require that the superintendent of schools direct a continuing study of the need for new school sites and buildings, based upon an assembling of data showing trends in population for the whole community and shifts in population and in public school enrollment by convenient areas and by grades or other divisions of the school system; and that it pass upon the needs of financing such additions to the plant as may be necessary or expedient.

6. That the school committee pass upon the plans for new buildings approved by the chief executive officer and his staff and that the superintendent of schools indicate in the case of each plan so presented the necessity for the accommodations to be provided in terms of present or prospective enrollments not otherwise adequately provided for, and in terms of the relationship of the facilities to be provided in the new structure to the courses of study to be taught therein.

7. That the school committee adopt a set of rules governing its own procedure in which is established the position of the superintendent of schools as the chief executive officer of the school committee, and indicating his responsibility and relationship to the school committee as has been suggested above; that these rules define the qualifications of all the employees of the school committee, and that they include a consideration of such other matters of uniform procedure as may be essential to the proper conduct of a system of schools.

The two foregoing quotations have implied three principles relative to the duties of a board of education : First, it should select a chief executive officer, the superintendent of schools ; second, it should determine the policies of the school system ; and third, it should see to it that these policies are carried out by the superintendent and his associates.

There is also an implication of a distinction between the terms *policy* and *administrative detail*. Dr. Hans C. Olsen has rendered a conspicuous service by making a clear-cut distinction between these two terms as applied to school administration and by applying them to the numerous activities discovered in an exhaustive analysis of school board activities in cities large and small. His definitions of these terms are the following : " Decisions determining how problems and jobs shall be solved and administered are policies " ; " Application of policies to single or individual problems and jobs is an administrative detail. " ¹

He points out further the exact function of the board and its executive officer in the following language :

If these criteria are accepted by a board of education, it follows that the board will seldom, if ever, concern itself with specific or individual cases. Instead, it will determine the policies that shall govern in administering single cases. Should a case arise for which there is no established policy, the superintendent will rarely take this case to the board for its consideration. On the contrary, he will analyze the case to determine the issue upon which a decision by the board is needed, and it will be the function of the board to establish its policy with respect to this issue. After such action has been taken by the board, the superintendent will apply the policy to the particular case in question.

¹ Hans C. Olsen, *The Work of Boards of Education*, page 9. (Teachers College, Columbia University, New York ; 1926. Used by permission.)

THE COMMITTEE SYSTEM

If Dr. Olsen's criteria are accepted as sound, then a serious question arises concerning the function of school board committees. These committees are an inheritance from the days when the board was both a legislative and an administrative body, the administrative work being done by smaller groups within the larger body. But, with the advent of highly trained executive officers, students of administration question the necessity of any standing committees. That this feeling is evidently widespread is evidenced by a distinct tendency toward a smaller number of such committees and by the fact that many cities have abandoned them altogether.

Deffenbaugh, after conducting an inquiry among cities ranging in size from five thousand to thirty thousand, says: ¹

Though the tendency is toward fewer committees, many boards of education are still overburdened with useless committees. Sometimes there are as many as there are board members, each member holding a chairmanship.

TABLE 5

NUMBER OF BOARDS HAVING COMMITTEES OF VARIOUS SIZES

NUMBER OF SCHOOL BOARDS	NUMBER OF STANDING COMMITTEES	PER CENT
145	0	28.1
10	1	1.9
24	2	4.6
65	3	12.6
64	4	12.5
86	5	16.6
69	6	13.3
29	7	5.6
10	8	1.9
12	9	2.3
1	10	.2
1	11	.2
1	14	.2

¹ W. S. Deffenbaugh, *Administration of Schools in the Smaller Cities* (Bulletin, 1922, No. 2, of the United States Bureau of Education), page 26. (Government Printing Office, Washington.)

Table 5, taken from Deffenbaugh, shows the present situation. He says further :

Among the many different committees reported are finance, buildings, teachers, auditing, visiting, textbook and supplies, complaints, janitors, sanitation, promotion, manual training, high school, discipline, athletics, medical inspection, vocational education, courses of study.

Extracts from the minutes of the School Committee of Springfield, Massachusetts, show how that organization acts through standing and special committees, and how these committees, rather than the school committee¹ as a whole, are likely to determine policies :²

The question of the appointment of a tool boy for the classes in electrical construction in the Evening Trades School was referred to the Technical High School Committee.

The suggestion of Mr. Warner that the clerks at the Technical High School arrange their vacations so that one clerk shall be on duty during the summer months was referred to the chairmen of three high schools' committees.

The Technical High School Committee reported favorably upon Mr. Warner's request that he be allowed to arrange the vacations of the Technical High School clerks so that one would be on duty during the summer months.

The special Committee on Car Tickets, consisting of the members from Wards One and Two, reported that car tickets had been issued to Chestnut Street pupils living in the Armory Street District, for the remainder of the school year. The Board continued this committee with the request that they take up the matter before schools open in September.

¹ See footnote on page 46.

² George D. Strayer and others, *Report of the Survey of Certain Aspects of the Public School System of Springfield, Massachusetts* (School Year 1923-1924). (Teachers College, Columbia University, New York. Used by permission.)

The members from Ward Seven and the member at large were appointed on a committee to take up with the Tuberculosis Association the matter of car tickets for pupils of the open-air schools.

The member from Ward Three reported a deficit in the High Schools Lunch Department due to the expense of running the cafeteria checking machines, which cost last year exceeded the expense before the machines were installed. The member from Ward Three was requested to consult further with the director of the High Schools Lunch Department, and with the Committee on Home Economics, and to report at the next meeting of the Board.

The Committee on Household Science and Art reported that they had authorized the director to approve the granting of full pay to the women workers in the high schools' lunchrooms for the month of March, and to deduct a total of one week's pay from their compensation, . . . such deduction to be made as partial return for the seven weeks' salary paid these workers during the influenza vacation when they were not at work.

The High School of Commerce Committee reported unfavorably upon the contemplated purchase of a thirty-quart mixing machine for the Lunch Department of that school, . . . stating that in the opinion of the committee the purchase of such a machine at this time is not justified.

The Chairman of the committee appointed to consider the question of opening an additional room in the Five Mile Pond School recommended that for a trial period this school shall be so reorganized as to include the pupils from Grades One to Six, and that an additional room be opened in order to accommodate the increased enrollment. The Board approved the report of this committee.

The Committee on Industrial Schools and Manual Arts reported that Mr. Dorman, Superintendent of Buildings, was working out the problem of suitable treatment for the lunchroom floor and the provision for a dressing room at the Vocational School. This committee was continued.

The Committee on Textbooks and Supplies reported that they had approved the purchase of six Burroughs calculating machines for use in the High School of Commerce. This report was adopted by the Board.

It is evident from the foregoing that in many cases administrative and supervisory activities are performed by these committees. Even the formulation of educational policies may become the work of these committees or their members.

Figure 12,¹ taken from the same survey report, shows the disproportionate amount of work and discussion involved in the purchase of a piano when the matter was delegated to a standing committee. A simpler and more direct procedure would have been to delegate an executive officer of the school committee to investigate the need, report back to the school committee, and be authorized by them to make the purchase.

An extract from a study by Dr. Frank W. Ballou, Superintendent of Schools in the District of Columbia, epitomizes the committee situation comprehensively and effectively:²

The few members of a standing committee play altogether too large a part in the decisions of the board, as shown by the fact that more than 80 per cent of the committees are minority committees and the reports of committees, whether large or small, through necessity are seldom discussed by the whole board.

The committee organization permits the exercise of pernicious influences, because (1) of the prevailing method of appointment of members by the president of the board, because (2) of its closed meetings, and because (3) it is easier to deal unscrupulously with a small committee than it is with a whole board.

The committee system violates four principles of effective administration, as follows: (1) The duties of each committee cannot be clearly defined, because the functions of committees overlap, due to the fact that committees are usually organized according to no known principle of organization. (2) This makes it impossible to fix the responsibility of each committee, because no one knows just what its duties are. (3) The absence of any well-defined responsibilities makes it impossible to hold the committee responsible for its acts. (4) The committee system tends to confuse lay control with professional and executive management, because the prevailing

¹ *Op. cit.*, page 25.

² Frank W. Ballou, *The Appointment of Teachers in Cities* (Harvard Studies in Education, Vol. 2), pages 121-122. (Harvard University Press, Cambridge, Massachusetts; 1915.)

This bar represents \$1,500,000.00, the approximate budget of the School Committee for 1920.

← This thread, though greatly enlarged, represents \$1,000.00, the approximate cost of a new piano for Central High School.

The calendar below shows how cautiously the School Committee investigated the replacement of old piano in Central High School

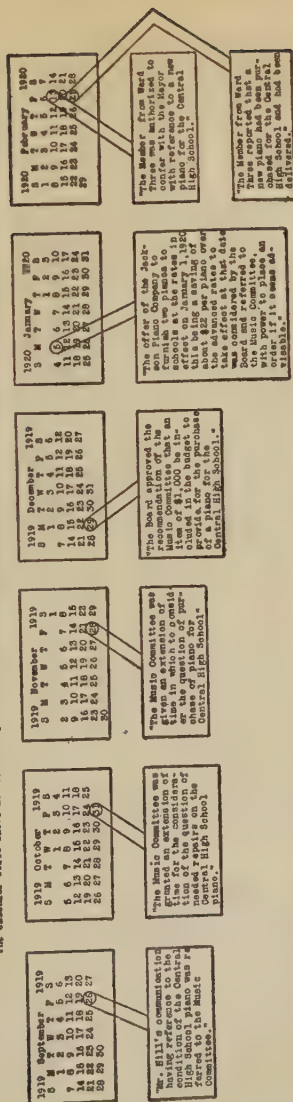


Fig. 12. Committee action in purchasing a piano for the Central High School, Springfield, Massachusetts.

practice is to refer the discharge of executive functions to committees of the board rather than to the board's professional executives. For these reasons the practice of boards of education of organizing into standing committees for the transaction of their business must be condemned.

It may seem impossible, or inadvisable, to dispense with the committee system entirely. In that event it may be recalled that in the line organization of the Ronald Press Company there were three standing committees; but, as was pointed out, the functions of these committees were only *advisory*.¹ If school board committees there must be, then they should be purely *advisory* and never *administrative*. It is the assumption of administrative functions that renders school board committees obnoxious. A plan better than that of organizing into committees is for the board to meet as a committee of the whole for informal discussion prior to its formal meeting. Such meeting serves the purpose usually served by a board committee.

MEETINGS OF THE BOARD OF EDUCATION

The proper procedure in the conduct of board meetings is a matter that engrosses the attention of board members and administrators from time to time. It is relatively easy for a board to devote its time and energy to the consideration of purely trivial matters and leave the larger issues to care for themselves.

Dr. Hans C. Olsen, to whose work reference has been made before, has made a careful analysis of school board procedure. His statement is quoted as the best summary of the case:²

As nearly as possible all sessions of the board should be conducted in an informal fashion. That this should be so is readily seen when

¹ See Figure 2 on page 23.

² Hans C. Olsen, *The Work of Boards of Education*, page 165. (Teachers College, Columbia University, New York; 1926. Used by permission.)

it is understood that the work of the board is deliberative and not argumentative. Only through informal meetings is it possible for each member of the board to contribute freely to the consideration of the problems at hand.

Except in rare or special instances, nothing should be introduced for consideration in board meetings unless it first has been submitted to the superintendent and he has prepared for the board all the available facts concerning it and incorporated those in a report to the board. The reports and recommendations of the superintendent to be considered at a meeting should be sent to members of the board in advance of the meetings. By this procedure members can come to the meetings of the board prepared to discuss intelligently each item of business to be considered.

Only in cases of appeal from the decision of the superintendent, and then only after it is clear that the superintendent cannot bring the matter to a settlement, should the board listen to and pass on communications and complaints. For a board to grant hearings on any and all matters soon forces the board away from its true function over to the performance of tasks which should be delegated to the superintendent.

Study of the minutes of many cities shows that corrections in minutes are seldom made where minutes are read in board meetings. That this should be so is easily understood when the perfunctory method of reading minutes in board meetings is recalled.

It is therefore recommended that the reading of the minutes be dispensed with in board meetings. Instead the minutes should be prepared immediately after each meeting of the board and copies of them sent to each member. If any correction is to be made in them, that fact can be pointed out in the next board meeting. Unless such correction is made, the minutes should stand approved as sent to the members.

The procedure here recommended implies careful preparation on the part of its executive officers for the meeting of the board. The superintendent should secure from each of his assistants in charge of the various phases of the work detailed reports of progress and of needs, both business and educational. These reports, or essential parts of them, should be incorporated in a comprehensive report which should be

forwarded to each member prior to the meeting so that he can give attention at his leisure to the various matters that are to receive consideration. When policies are to be formulated, a clear case should be made for them, supplemented by supporting data. A form of resolution may in many instances be devised so that the board will be ready to deliberate. Thus the board will have a definite plan which it may follow in its meeting. Such a report will also serve to keep the board members in constant touch with the many activities of the school system. Essential parts of this report, or the entire document, may properly be made part of the board's permanent records.

THE BOARD'S SECRETARIAL OFFICER AND OFFICIAL RECORD

Since a board of education is a corporate body, it must have a recording officer. The title of such official is usually "secretary" or "clerk." He may be chosen from the membership of the board itself, from without, or from the staff of executive officers. As the secretary of a corporate body this individual performs the following functions: records the proceedings of the board and its committees; acts as custodian of the official records, such as contracts, deeds, securities, books of record, canceled warrants, bonds, and coupons; executes official documents in his secretarial capacity; makes reports required by law; notifies members of meetings; handles board correspondence — proceeds, in short, as the secretary of any corporation.

This officer, to be sure, is frequently delegated to perform activities of an administrative character. When acting in that capacity, he has become more than a corporation secretary; he has been made in fact an executive officer. It is essential that this distinction be kept clearly in mind, and that in the capacity of administrative officer, if such he has

been designated, the secretary be assigned his proper place in the organization.

The quotation from Dr. Olsen implies also that the board should have an official record. This is imperative since a board is a corporate body and its official record constitutes the evidence of its proceedings. Legally, such a record is necessary in the event that litigation arises.

The record should consist of a series of carefully worded resolutions with the vote on each recorded, particularly if the transaction involves the appropriation or expenditure of money. It is highly desirable that the resolutions relating to matters of considerable moment be submitted in advance of the meeting. In the event that the action of the board must be in strict compliance with some law, as in the authorization of bonds, it may be necessary to have the resolutions reviewed or even formulated by an attorney before the board assembles.

The data on the proceedings should be kept in some form of binder or recording book where they can be properly indexed and in which they can be preserved for a long period of time. The practice of cities like St. Louis and Cleveland of publishing their record is commendable, but it is not feasible for the smaller cities.

CONCLUSION

Control of the public schools rests in a board representing the people of the district served. This board is a corporate body and therefore is empowered to act as a unit. Accepted administrative procedure dictates the appointment of an administrative officer whose duty it is to execute the policies that are determined by the board. The committee system, which is an inheritance from the time when the board was an administrative as well as a legislative body, is no longer desirable. Standing committees should therefore be abolished or relegated to the position of advisory committees only.

The meetings should be limited to a discussion of matters of policy, and the execution of details should be left to the administrative officers. Records of official acts are of paramount importance and should be carefully preserved.

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ARP, JULIUS BERNHARD. *Rural Education and the Consolidated School*. World Book Company, Yonkers-on-Hudson, New York; 1920.

Chapter IV discusses rural school organization and support.

AYRES, LEONARD P. *School Organization and Administration*. Russell Sage Foundation, New York; 1916.

A study of school organization and administration in Cleveland, Ohio. Applicable to any school system.

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Chapter VI contains a discussion of the committee system.

CHADSEY, CHARLES E. "The Report of the Committee on the Status of the Superintendent," *First Yearbook of the Department of Superintendence*, pages 153-158. National Education Association, Washington; 1923.

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Describes the situation in Portland, Oregon, with recommendations in terms applicable to compossible situations.

—— *Public School Administration*, pages 85-129. Houghton Mifflin Company, Boston; 1922.

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DEFFENBAUGH, WALTER S. *Administration of Schools in the Smaller Cities* (Bulletin, 1922, No. 2, of the United States Bureau of Education). Government Printing Office, Washington.

Gives facts relating to boards of education and other administrative matters in cities of more than thirty thousand.

DOUGLASS, BENNETT C. "The Status of the Superintendent," *First Year-book of the Department of Superintendence*, pages 4-152. National Education Association, Washington; 1923.

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DUTTON, SAMUEL T., and SNEDDEN, DAVID S. *The Administration of Public Education in the United States*, Chapters VIII and IX. The Macmillan Company, New York; 1908.

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EARLE, JESSE. "What about School Boards and Superintendents?" *American School Board Journal*: Vol. 69, No. 1, page 42 (July, 1924).

A presentation of the qualifications and requirements of school board members and superintendents from a board member's point of view.

ELLIOTT, EDWARD C. *City School Supervision*. World Book Company, Yonkers-on-Hudson, New York; 1914.

Chapters II and III deal with the organization for administration and supervision of America's largest city school system. Chapters V and VII outline the duties and powers of the administrative staff.

ENGELHARDT, N. L. and FRED. *Public School Business Administration*. Teachers College, Columbia University, New York; 1927.

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FINEGAN, THOMAS E.; WITHERS, J. W.; BRIGGS, T. H.; WEET, H. S.; and others. *Report of the Survey of the Public Schools of Philadelphia*: Book II. Public Education and Child Labor Association of Pennsylvania, Philadelphia; 1922.

Part I discusses the organization and administration of the Philadelphia school system together with its historical development.

GANDERS, HARRY S. *Personnel and Organization of Schools in the Small Cities* (Bulletin, 1926, No. 6, of the United States Bureau of Education). Government Printing Office, Washington.

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HANUS, PAUL H. *School Efficiency*. World Book Company, Yonkers-on-Hudson, New York; 1913.

Chapters VII and VIII describe the administrative set-up common in 1913. Changes are suggested.

60 BUSINESS ADMINISTRATION OF PUBLIC SCHOOLS

HEER, AMOS L. *The Present Status of Business Executives in the Public Schools of the United States in Cities of 25,000 and More Inhabitants.* Published by the author, Kent, Ohio; 1928.

A thoroughgoing study of the school business manager and the organization of various boards of education.

HUNTER, FRED M. "Professional Leadership of the Superintendent," *American Educational Digest* of March, 1925, page 292.

An able presentation of the superintendent's function as a professional leader.

JUDD, CHARLES H., and others. *Survey of the St. Louis Public Schools: Part I, "Organization and Administration."* World Book Company, Yonkers-on-Hudson, New York; 1918.

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KNOEPPEL, CHARLES E. "Laws of Industrial Organization," *Industrial Management*, Vol. 58: pages 265-268, 381-383, 494-498; Vol. 59: pages 43-47, 145-148, 184-189.

A statement of fundamental principles of organization.

LANSBURGH, RICHARD H. *Industrial Management.* John Wiley and Sons, New York; 1923.

An admirable treatise on the principles of industrial management.

MCGAUGHY, JAMES R. *The Fiscal Administration of City School Systems*, Appendix A. The Macmillan Company, New York; 1924.

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MOORE, ERNEST CARROLL. *How New York City Administers Its Schools.* World Book Company, Yonkers-on-Hudson, New York; 1913.

Chapters I-IV, VII-VIII, and XVIII-XIX are devoted to a description of the functioning of the type of control of the school system in New York City, its appraisal, and suggestions for changes.

MOREHART, GROVER C. *The Legal Status of City School Boards.* Teachers College, Columbia University, New York; 1927.

Outlines a statute for governing city school districts and sets up criteria for evaluating such statutes.

MORRISON, JOHN CAYCE. *The Legal Status of the City School Superintendent.* Warwick and York, Inc., Baltimore; 1922.

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— "The Value of Carefully Defined Rules and Regulations Covering the Work of the School Board and Superintendent," *American School Board Journal*: Vol. 72, No. 2, page 48 (February, 1926).

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NORTON, JOHN K. *A Handbook of Major Educational Issues (Research Bulletin, Vol. 4, No. 4)*. National Education Association, Washington; 1926.
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OLSEN, HANS C. *The Work of Boards of Education (Contributions to Education, No. 213)*. Teachers College, Columbia University, New York; 1926.

Analysis of the work of boards of education, based on their necessities and on criteria established; distinguishes between policies and details.

REEDER, WARD G. *The Business Administration of a School System*. Ginn & Co., Boston; 1929.

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SEARS, J. B. *The Boise Survey*, Chapter II. World Book Company, Yonkers-on-Hudson, New York; 1920.

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SMITH, HARRY P. *The Business Administration of a City School System (Contributions to Education, No. 197)*. Teachers College, Columbia University, New York; 1926.

Classifies a large number of cities on basis of type of administrative control, and studies intensively various phases of the two types.

STRAYER, GEORGE D. "The Relation of Administrative Officers to Boards of Education," *First Yearbook of the Department of Superintendence*, pages 159-164. National Education Association, Washington; 1923.

Outlines the relationships that should exist between boards of education and school superintendents.

— and ENGELHARDT, N. L. *Problems in Educational Administration*. Teachers College, Columbia University, New York; 1925.

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STRAYER, GEORGE D., and others. *Report of the Survey of Certain Aspects of the Public School System of Providence, Rhode Island (School Year 1923-1924)*. Teachers College, Columbia University, New York.

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— *Report of the Survey of Certain Aspects of the Public School System of Springfield, Massachusetts (School Year 1923-1924)*. Teachers College, Columbia University, New York.

Analyzes the Springfield administrative set-up, and recommends changes to make it harmonize with modern practice.

STRAYER, GEORGE D., and others. *Report of the Survey of the Schools of Watertown, New York*. Teachers College, Columbia University, New York; 1925.

Chapter I includes a discussion of the proposed reorganization of the administrative set-up of that city.

— *Some Problems in City School Administration*. World Book Company, Yonkers-on-Hudson, New York; 1916.

Chapter I deals with the administration of the public school system of Butte, Montana, suggesting the proper functions of the board and fundamental administrative principles.

STUDEBAKER, J. W. "School Board Organization and the Superintendent," *American School Board Journal*: Vol. 68, No. 4, page 37 (April, 1924). Also in *Proceedings of the National Education Association, 1924*, pages 882-887.

An admirable discussion of the relation that should exist between a board of education and its chief executive officer.

THEISEN, W. W. *The City Superintendent and the Board of Education (Contributions to Education, No. 84)*. Teachers College, Columbia University, New York; 1917.

An intensive study of the board and its duties, the administrative organization, and the board's chief executive officer.

CHAPTER FOUR

UNIT VS. MULTIPLE CONTROL OF CITY SCHOOL ADMINISTRATION

IN the preceding chapters two types of organization for city school administration were outlined and defined. In the unit type administration is unified in one chief executive officer; in the multiple type there are two or more coördinate executive departments, by which plan the administration of business activities is separated from that of instruction.

Conflicting claims are made by the proponents of these two types of administrative control. The city school business manager, independent of the superintendent of schools, claims that he does business in a businesslike manner because he is a business man; that he saves money because he employs business methods superior to those employed by superintendents of schools and their assistants; that all things progress harmoniously for the education of the children in whose interest schools are established and maintained. The superintendent claims, on the other hand, that the business methods employed in unit-type cities are as effective as those employed in multiple-type cities, that the unit systems are no more costly, and that affairs are always conducted with the educational point of view predominant.

This question is of the utmost concern to all professional workers genuinely interested in American education. The economies so confidently claimed by the school business manager may be effected at the expense of the welfare of both teachers and pupils; so-called business administration may stress unduly some things far removed from educational activities; and harmony in the conduct of coördinate administrative departments may often be a pure fiction, with the youth of the schools silent sufferers. The conflicting

claims of the two systems led the writer recently to make an intensive study of this situation for the purpose of determining what weight, if any, should be attached to the arguments of both sides.¹

FIVE FUNDAMENTAL QUESTIONS

In any such study several fundamental questions immediately arise. Reduced to their simplest form these appear to be: (1) Are there significant differences between the two types of cities in the methods of carrying on typical business activities? (2) Are there significant differences between the two types of cities in educational costs? (3) Are there characteristic weaknesses in the administrative relationships existing between coördinate executive officers in charge of multiple-type cities? (4) Are the functions usually performed by administrative officers executed differently in the two types of cities? (5) Are the two types equally efficient as educational organizations?

In an attempt to answer the first of these questions, the writer made a personal visit to each of twenty-five New York and New Jersey cities with populations of over thirty thousand — thirteen cities of the unit type and twelve of the multiple type. The business activities which were studied intensively were budgetary procedure, financial reporting, accounting, the purchase of supplies, storage and distribution of supplies, the purchase of the fuel supply, pay-roll procedure, the insuring of school property, and maintenance of the school plant. The issuing of bonds was not considered because the municipal governments supervise that activity in a great majority of the cities visited.

The second question the writer answered by citing school cost data from a *Research Bulletin of the National Education Association* which contains the unit costs by functions,

¹ Harry P. Smith, *The Business Administration of a City School System*. (Teachers College, Columbia University, New York; 1926.)

for the fiscal year ending in 1923, of 116 of the 252 cities shown by the 1920 Federal census to have a population of thirty thousand or more.¹ As many of these cities as could be definitely assigned to one classification or the other were included. A second investigator took school cost data from the reports of the United States Bureau of Education and compared the two types of cities.

Those personal and administrative relationships implied in the third question, which are so essential to the successful functioning of any organization and yet not susceptible of study through objective methods, were studied in the following ways: through school reports, through observations of the investigator and of members of the staff of the Division of Field Studies, Institute of Educational Research of Teachers College, Columbia University; through confidential reports from professional executives and other employees; and through an analysis, made by a committee of twenty-four prominent and public-spirited citizens of that city, of the administration of the school system of a multiple-type city.

The fourth question has been answered by two other investigators who have made scientific studies in this field. Their findings will be summarized later in this chapter.

The fifth question has been considered by a researcher who selected a set of criteria which he contended would measure the relative efficiency of the school systems operating under the two types of administrative control. These criteria and their differences will be noted later.

EVALUATING THE BUSINESS ACTIVITIES OF THE TWO TYPES

The typical business activities here outlined were selected on several different bases. By-laws of boards of education were examined; minutes of board meetings were carefully checked; and standard works on corporation management

¹ *Research Bulletin*: Vol. 2, Nos. 1 and 2. (National Education Association, Washington; 1924.)

were consulted. From these there was devised a check list, containing a detailed analysis of each activity, which was utilized when a city was visited.

To secure an objective basis for evaluating the activities and the practices found, criteria were established by asking groups of competent judges in the several fields to rate the activities and practices according to a set of uniform directions given them by the writer. The average of the ratings was then computed for each activity or practice. The scores thus obtained were used in evaluating the business activities of the two types of cities visited in person.

Table 6 summarizes the eight activities rated for the two types of cities. The average total score in each case is the sum of the values for all cities in a given activity, divided by the number of cities.

TABLE 6
AVERAGE TOTAL SCORES FOR BUSINESS ACTIVITIES OF UNIT- AND
MULTIPLE-TYPE CITIES

ACTIVITY	AVERAGE TOTAL SCORE FOR UNIT- TYPE CITIES	AVERAGE TOTAL SCORE FOR MULTIPLE- TYPE CITIES
Budgetary	52.4	49.7
Financial reporting	34.5	29.7
Accounting	84.9	108.8
Purchase of supplies	100.6	99.7
Storage and distribution of supplies	48.8	51.8
Purchase of fuel	57.5	60.8
Pay roll	40.9	40.9
Insuring school property . .	46.4	45.0

Table 6 shows that little difference exists between the methods of doing the board's business in the two types of city visited. The multiple cities had better accounting procedure, due, no doubt, to the fact that many school business

executives are expert accountants. It is significant, however, that no better budgetary procedure and financial reporting are found in multiple-type cities than those that characterize the unit-type cities. In fact, the latter excel on the basis of the criteria used in both budget making and financial reporting. Of the eight activities listed, the unit cities excel in four and the multiple in three. There is no perceptible difference in the pay-roll procedure. It may seriously be questioned, then, whether there is any essential difference in methods of doing the board's business, whatever the type of city.¹

COMPARATIVE EDUCATIONAL COSTS

It was possible by several means to identify ninety-seven of the 116 cities of more than thirty thousand population whose cost data were included in the *Research Bulletin of the National Education Association* already cited. By-laws of boards of education were examined; school surveys were checked; school laws were analyzed; and, finally, a checking questionnaire was sent out by the Research Division of the National Education Association to school superintendents and school business executives. Fifty-two of these cities were identified as unit type and forty-five as multiple.

The averages and standard deviations of the unit costs by functions in cities of both types were computed together with their differences. A statistical technique was applied to determine whether the differences found were significant. This statistical procedure involves finding the square root of the sum of the squares of the probable errors of the averages indicated above, the quantity thus found being known as the "probable error of the difference of the averages." The ratio of the difference of the averages to the probable error of the dif-

¹ This section is in effect a summary of the author's *The Business Administration of a City School System*, Chapter II.

ference of the averages was then computed. The number thus obtained varies from zero upward and has been designated by Dr. James R. McGaughy as the "critical ratio."¹ Statisticians are agreed that to be really significant a "critical ratio" should be larger than three, any smaller difference being attributable to chance errors or improper sampling. Table 7 summarizes the average costs and the critical ratios thus found; it indicates the differences that are significant and those that are probably not significant. Since ninety-seven of the 252 cities of more than thirty thousand population are included, we have a true sampling of these larger cities.

TABLE 7
SUMMARIZING THE CRITICAL RATIOS

ITEMS	AVERAGE PER CAPITA COST IN UNIT-TYPE CITIES	AVERAGE PER CAPITA COST IN MULTIPLE-TYPE CITIES	CRITICAL RATIO OF DIF- ERENCE OF AVERAGES
Business control . . .	Significant Differences		
	\$.91	\$ 1.34	4.19
	Differences Not Significant		
General control . . .	\$ 2.78	\$ 3.00	1.48
Educational control . .	1.87	1.66	2.22
Instructional service .	67.81	68.52	.34
Operation	9.94	9.39	1.40
Maintenance	3.51	3.40	.45
Fixed charges . . .	1.51	1.59	.40
Auxiliary agencies . .	2.55	2.57	.08
Total current expense .	88.12	88.46	.13

It thus appears that there is but one significant difference—that in the added cost of business administration in cities of the multiple type. On the whole, unit cities spend slightly

¹ James R. McGaughy, *The Fiscal Administration of City School Systems*, pages 69-74. (The Macmillan Company, New York; 1924.)

less per capita for current expense, but the difference is wholly insignificant when reckoned by this technique.¹

DIVIDED RESPONSIBILITY AND ITS RESULTS

The fundamental weakness of the multiple type of organization lies in the possibility that the executive officer in charge of business activities may not be trained as an educator. He may have a business, an architectural, or possibly a political point of view. Through the functioning of this officer, who is coördinate with the educational executive, the realization of the primary objective of the school — the education of the children — may be seriously hampered.

If an educational system is to perform its true function, it cannot be hampered by unfortunate relationships among its executives. It was evident to the writer on visiting twelve large eastern cities of the multiple type that many school business executives were thoroughly conscious of the responsibility of their positions, particularly of the necessity of keeping the educational welfare of the children ever in mind. It was also evident that both business and educational executives in these multiple cities were conscious of the fact that one officer might invade the field of the other, and that care should be exercised at all times lest there be an open "break." There was on the part of business executives a tendency to stress the fact that *their* policies were resulting in telling economies, that *their* school systems were costing less than others near by. Other statements indicated that other points of view sometimes prevailed which might, under certain conditions, operate to the possible detriment of the educational end of the organization.

The writer collected a large number of incidents bearing on these administrative relationships. These were learned

¹ This is essentially a summary of the writer's *The Business Administration of a City School System*, Chapter III.

through personal visits to a dozen large cities; in personal conferences with former professional workers in those cities; from correspondence and confidential conferences with employees, present and past; in the conferences of members of the Division of Field Studies of Teachers College, Columbia University; and from survey reports and minutes of board meetings.

A careful analysis of data secured from twenty-three cities of the multiple type indicates that, regardless of the personnel involved, an educational point of view is frequently lacking in the administration of school business affairs and administrative responsibility is definitely divided.

The lack of an educational point of view results in:

1. The improper planning and equipping of school buildings in terms of the educational program;
2. The hampering of adequate operation and maintenance of the school plant;
3. The purchase of cheap or improper supplies, thereby handicapping educational activities.

The division of administrative responsibility gives rise to:

1. The improper assignment of functions among administrative officers;
2. The shifting of responsibility;
3. The conduct of affairs on a purely personal plane;
4. Inadequate financial planning and reporting;
5. The hampering of the execution of the educational policy of a school system.

Improper planning and equipping of school buildings. The planning and equipping of school buildings is delegated with surprising frequency to an independent executive officer. Numerous illustrations of the operation of this plan might be given, but one will suffice.¹

¹ Unless otherwise indicated the quotations are from the author's *The Business Administration of a City School System*, Chapter IV.

A former superintendent in City B reports that the business executive reduced by three classrooms the schedule of rooms furnished by the superintendent of city schools to make room for a light and power plant in an addition to the high school building. He did a similar thing in an intermediate school plant. The object was to enable the district to generate its own electricity, which the business executive claimed could be done for a lower figure than it could be purchased in the market.

In this same city the superintendent and architect recommended the univent system of ventilation. The business manager recommended and secured a plenum system on the ground that it alone would enable them to ozonize the air — a process which he maintained from his studies would be in operation within a few years.

Hampering of operation and maintenance. The operation and maintenance of school buildings — which duties, in cities of the multiple type, are usually in the hands of independent executive officers — are frequently performed less efficiently under this form of organization than in cities of the unit type. The methods of requisitioning repairs, the order in which these repairs are made, and their handling in the light of educational requirements and educational standards, may profoundly influence the physical and educational welfare of the children. Methods of securing needed repairs may be so cumbersome as to make it difficult to get action and render the results unsatisfactory from an educational point of view.

A professional executive of City H has the following plan to offer for maintenance of the plant :

Our procedure for repairs is this :

(1) The principal must make a written request to the department for needed repairs. He asks this year for everything he can predict will be needed next year.

(2) If the request is approved in that department, a letter is written to the [business executive] asking that the repairs be made. This approval is based on the amount of the budget.

(3) If approved by the [business executive's] department, a formal order is issued to the foreman or foremen of the trades concerned in

making the repairs. This approval is based, of course, theoretically on the amount of money set aside for such repairs that is still available at the time the request is made. Actually the approval is based pretty largely upon the standing the principal and custodian have with the [business executive].

(4) After this approval, the foremen make their estimates of the amount of money that the needed repairs will take.

(5) If still approved, an order is issued . . . to make formal drawings of repairs needed. Absolutely nothing is done without a formal drawing being made.

(6) The drawing then is turned over to the foreman to order supplies needed for the work. It depends on the standing of the principal with the foreman concerned whether he even has an opportunity of approving the drawings for the repairs before they actually appear on the job to do the work. Oftentimes the principal does not even see the drawings that are made.

The above procedure about repairs takes time at the very best. My impression is that under no circumstances are repairs made under three months. . . . Our files show at the present time one instance of an order for repairs that was approved by — [a member of the instructional staff] on August 25, . . . that has not yet been done [April 20 of the following year]. Throughout the school system instances of this can be duplicated in fairly large numbers. In the — building we had orders for repairs, approved by everyone on the educational side of the board of education, that were not made for as long as two years — specifically one request for the replacement of plaster that had fallen from the ceiling of the —. The — had been especially guilty in delaying repairs by delaying for weeks and months requests from foremen for blueprints for repairs.

Not infrequently the business department of a multiple-type city school system has authority to appoint building custodians and engineers and to oversee their work. Such situations may lead to the improper appointment or assignment of operation employees. The lack of authority of principals over employees responsible to an independent business executive may lead to difficulties between the building principals and the custodians. In any event, it is not un-

common for other motives to operate than the furthering of the educational welfare of the children.¹

A former superintendent of City B reports that when he requested the custodian of the buildings to cut off the legs of some kindergarten chairs, which were too long for use, the business executive to whom the custodians were responsible issued contrary orders with the result that the superintendent himself was obliged to cut off the chair legs in order to make them of the proper height for the children.

In the same city the business executive had on the force a custodian who was a trouble maker. He assigned that custodian to a certain building notwithstanding serious objections raised by the principal to having that custodian in his school.

Purchasing cheap or improper supplies. The purchase of cheap or improper educational supplies is a characteristic and not infrequent result of the multiple type of organization. The following incident, reported from City H, shows the kind of situation that may result :

All purchasing is done by the [business executive's] department, and the purchases have obviously been of the cheapest available material in many instances.

Specifically, school compasses bought in large quantities two years ago were purchased of a type absolutely useless in classrooms, yet it was fully one year, after continuous protest from high school principals, before a different type that cost more money was purchased. Cheaper crayon has been purchased in a number of instances that met concerted disapproval on the part of principals.

Assigning functions improperly. The improper assignment of functions is perhaps an outstanding weakness of the multiple type of organization. There is a tendency to make the executives of the business department actually control the policies of the entire system.

The Cleveland survey report mentions the following

¹ See footnote on page 70.

anomalous situations which still exist in the administrative set-up of the Cleveland public schools.¹

The anomalies brought about by this situation are many. For example, the director² appoints the superintendent's stenographer and private secretary and may discharge them at will. Provided the board approves his action, the director may appoint all subordinates without consulting the heads of divisions in which they are placed. The director may discharge employees without consulting the board and the board may discharge them without consulting the director.

The superintendent is responsible for the use of buildings during school hours while the director is responsible for their use at other times. If a school building is to be used for lectures to teachers on educational subjects, consistent practice would require that the director approve the character of the lectures and give permission for the use of the building.

Since school principals are educational employees and custodians are business employees, the latter are completely independent of the former. If a new door handle is needed in a schoolhouse, it may be requisitioned by the custodian from the business department. If, on the other hand, the principal takes the initiative, she requisitions it from the city superintendent, who transmits the request to the supervisor of requisitions and supplies.

The last-mentioned procedure has been modified in one respect since the survey. Both principal and custodian now start their requisitions simultaneously over these two divergent routes in the hope that one or the other may result in the desired improvement!

The writer discovered the following situation in a city visited: ³

In City A the financial executive of the board of education was responsible for preparation of the budget. This financial agent

¹ Leonard P. Ayres, *School Organization and Administration*, pages 85 ff. (The Russell Sage Foundation, New York; 1916.)

² Name applied to business executive by Ohio statutes.

³ See footnote on page 70.

claimed that the executive in charge of buildings and grounds had no "business sense" and always overran his budget in the operation and maintenance of buildings. The executive in charge of instruction was equally emphatic that neither of the other executives had any "business sense" and both exceeded their budgets. It was he alone who saved the day by providing for a surplus in the instruction budget which made up the deficits in the budgets of the others. This provision was very clearly made by budgeting all instruction employees at the salaries to which they would be entitled the succeeding year. There was a 20 per cent turnover in the staff each year, making it possible to make replacements at lower salaries, thus creating a surplus which the other executives always used up.

Such a situation arose because no one individual was responsible for seeing that budget estimates were followed carefully. Had there been a person so delegated, such a state of affairs could not long exist.

Shifting responsibility. The multiple set-up fails to center responsibility definitely in some one executive, and results in the shifting of responsibility from one executive to another.

Conduct of affairs on a personal plane. Again, one executive in a multiple-type city may take such an attitude toward another that the conduct of affairs is largely determined by the personal relations existing between them.

In City A the superintendent of schools while making a supervisory visit to a school building noted a piece of playground apparatus in such condition that a child might have been seriously injured. He went immediately to a near-by mechanic and directed him to repair the equipment and submit his bill. The business executive in charge of purchasing became so incensed at this action of the superintendent that the incident was carried not only to the city board of education but to the state department of education as well.

Inadequate financial planning and reporting. Inadequate financial planning and reporting may characterize the multiple-type city. The budget, which should be built on a sound educational basis, is constructed by two individuals

working independently or by an independent business executive. The two departments will sometimes be contenders for the funds available, with the board finally acting as arbiter in the dispute.

The Grand Rapids survey report has the following recommendations to offer on this point:¹

The preparation of a school budget to be put before the board of education for approval should be the work of the two departments brought together under one reviewing agency able to judge relative values from an educational standpoint. It is felt that the present type of organization makes this impossible. . . .

The present school report of the board of education is a dual report. One is impressed with the fact that certain costs, computed in great detail, are reported each year by the business manager with no educational use being made of them. . . . The detailed computation of the costs of heating buildings has not been used definitely in the improvement of heating school buildings.

The hampering of the execution of the educational policy. Finally, the organizations characteristic of multiple-type cities may hamper the execution of the policies of the education department or actually control them. This is possible because the business executive may be solely responsible for planning and equipping school buildings, keeping the financial records, purchasing supplies and equipment, and formulating the budget.

The Boston Finance Commission in its survey of the Boston School Department describes the following condition:²

The committee found that school policies which should be directed and governed by the superintendent were in many cases conducted on a personal basis between the superintendent and other administrative officers, and that the latter through their freedom

¹ Charles H. Judd and others, *Survey of the Public Schools of Grand Rapids, Michigan*, page 444. (Board of Education, Grand Rapids; 1916.)

² *Report on the Boston School Department with Especial Emphasis on the Need for a Reorganization of Its Central Administrative System*, page 7. (Boston Finance Commission; 1916.)

from control by the superintendent could often hamper and dictate the educational policies of the superintendent. Indeed, this form of obstruction had been carried so far that when lately the business agent was requested by the superintendent of schools to furnish him with data relating to certain school activities the former declined to do so, and it was not until a month of the fiscal year had passed that the information was obtained.

The information which was sought here was pertinent to the formulating of the educational program by the superintendent of schools.

DR. MARBERRY'S STUDY

Dr. James O. Marberry has made a thorough study of this problem in cities ranging in population from thirty thousand to two hundred fifty thousand.¹ He classified the school organizations of these cities as "centralized" and "coördinated," the two classifications corresponding to the author's classification of unit and multiple.

On the basis of a checking questionnaire which was sent to each school system Dr. Marberry identified 140 city school districts as centralized and 66 as coördinated. To discover differences between the two types he compiled an index number composed of four educational and four financial factors as follows: (1) teacher-pupil ratio in the elementary schools, based on average daily attendance, (2) teacher-pupil ratio in the secondary schools, based on average daily attendance, (3) ratio of secondary school teachers to total teachers in day schools, (4) ratio of average daily attendance in secondary schools to total average daily attendance for day schools, (5) amount spent per pupil in average daily attendance for current expense, (6) ratio of day-school teachers' salaries to current expense, (7) ratio of principals' and

¹ James O. Marberry, *The Administration of Public Education in Centralized and Coördinated Schools*. (Unpublished doctor's dissertation in University of Wisconsin Library; 1926.)

teachers' salaries and expenses to current expense, (8) ratio of general control to current expense. Table 8 shows the means and the critical ratios for each type of city.

TABLE 8

AVERAGES FOR EACH TYPE OF CITY OF THE EIGHT FACTORS TOGETHER WITH CRITICAL RATIOS OF DIFFERENCE OF AVERAGES

DR. MARBERRY'S FACTORS	AVERAGE FOR CENTRALIZED CITIES	AVERAGE FOR COORDINATED CITIES	CRITICAL RATIO OF DIFFERENCE OF AVERAGES
First	30.2	30.8	1.12
Second	21.7	22.5	2.23
Third	22.6	21.2	2.38
Fourth	17.5	16.6	2.20
Fifth	90.6	92.2	5.90
Sixth	64.8	64.2	1.04
Seventh	7.6	7.1	2.00
Eighth	3.5	3.5	—

Applying the rule that only a difference of three or more shall be considered a significant difference, but one significant difference appeared — that between the averages for current expense, which was larger in the coördinated cities. In other words, current expense per child was significantly higher in the coördinated schools than in the centralized.

Reference to Table 7, page 68, will reveal the fact that in a smaller number of cities the current-expense average of multiple-type cities was found to be higher, though the difference here was not a significant one. Thus, the claim of saving money under the coördinated, or multiple, plan is not substantiated by either of two scientific studies.

Dr. Marberry applied a second measure, which he secured by determining the frequency with which each of ten functions of administration was performed by the superintendent of schools. Each function he weighted equally. These functions, suggestions for which he took from the *First Yearbook*

of the Department of Superintendence of the National Education Association, are as follows: ¹

1. Appointment of assistant superintendents, principals, teachers, janitors, and clerks.
2. Preparation of the budget.
3. Transfer of principals, teachers, and other employees.
4. Dismissal of principals, teachers, and other employees.
5. Attendance service.
6. Purchase and sale of buildings and grounds, approving architects' plans, and maintaining the school plant.
7. Determination of curricula.
8. Selection of textbooks and supplies.
9. Determination of new policies.
10. Direction and supervision of classroom instruction, continuation schools, and evening schools.

The first six functions were performed on the initiative of the superintendent in the centralized school systems much more frequently than in the coördinated school systems. No significant difference in the frequency of performance of the last four functions in the two types of cities was shown. These have for a long time been very generally delegated to superintendents.

DR. HEER'S STUDY

Dr. Amos L. Heer approached the problem from the angle of the frequency of the performance of forty-eight functions by the executive officers of the board in cities of various types.² He made a comparison between the unit-chief-executive and the dual types of organizations. This comparison showed the following facts:

¹ B. C. Douglass, "The Status of the Superintendent," *First Yearbook of the Department of Superintendence*, page 124. (National Education Association, Washington; 1923. Used by permission.)

² Amos L. Heer, *The Present Status of Business Executives in the Public Schools of the United States in Cities of 25,000 and More Inhabitants*. (Published by the author, Kent, Ohio; 1928. Used by permission.)

1. The number of times each function was performed.
2. The number of times each function was performed as a routine activity.
3. The number of times each function was performed only after approval of the board of education acting upon its own initiative or upon the recommendation of the business executive.
4. The number of times each function was performed only after approval of the board of education acting upon the recommendation of the superintendent of schools.
5. The number of times each function was performed upon the direction of the superintendent of schools without the action of the board of education.

Dr. Heer used thirty of the forty-nine unit-chief-executive and twenty-six of the forty-eight dual-executive types of cities. While he admitted that the five arrangements on which he based his comparison are not the only ways in which functions may be approved before they are executed, he argued that statistics about these methods of initiating the execution of a function would indicate whether any differences exist between the functions in these two types of organization.

He transmuted the frequency under each heading for each type to per cent of the total replies, and applied a statistical technique to determine the significance of the differences found. But nine of the forty-eight functions were performed a sufficiently greater number of times by the business departments in dual cities to make the difference significant. In the routine activities only five were found with significant differences. A comparison of the two types, based on functions performed only after action of the board acting upon its own initiative or upon the recommendation of the business department, revealed nine of the forty-eight with significant differences.

Dr. Heer concluded that the likenesses of the two types of organization were much greater than their differences and

insisted that the dual type of organization cannot exist in a pure form. Because of these facts, he argued that the administrative set-up of a city school system should coincide more fully with the principles of industrial organization. Specifically, he recommended for the larger cities an assistant superintendent in charge of business affairs with a separate secretary of the board of education who would also be secretary to the superintendent of schools in charge of the division of the board records and the division of accounts. For the smaller cities he recommended a combination of the two offices.

In this connection it may be pertinent to note that American cities under the mayor-council or the commission form of government have suffered from a similar lack of centering responsibility. Their executive officers have frequently been actuated by other motives than the furthering of the public welfare. But, beginning with Staunton, Virginia, in 1908, American municipalities have endeavored to correct these defects by adopting another type of government — the city-manager plan — the avowed purpose of which is to center administrative responsibility in one chief executive officer. The extent of this movement is indicated by the fact that the *Twelfth Yearbook of the International City Managers' Association* lists 340 American cities that had some type of the city-manager form of government in March, 1925.

THE ATTITUDE OF ADMINISTRATIVE EXPERTS

Numerous educational survey reports have stressed the necessity of one chief executive officer — an educational administrator to whom all others are subject. But these reports have been compiled by educators and represent the point of view of the professional educator.

At least two other outstanding reports have been made, however, by groups who were not composed of professional

educators. These groups undoubtedly had the point of view of the so-called business man.

The New York Bureau of Municipal Research made a survey several years ago of the organization and administration of the public schools of Harrisburg, Pennsylvania. After a careful study of the existing system and the state school code, the following statement was made : ¹

It is therefore recommended that the board include in a program of the state legislation . . . a proposal so to amend the state education law that the superintendent of the school district of Harrisburg may act as the chief executive officer of the school system. Under such a reorganization there should be an assistant superintendent in charge of business affairs and other assistant superintendents in charge of educational affairs as assigned by the superintendent of schools.

The Cleveland Board of Education recently appointed a citizens' committee of twenty-four prominent men and women to make a careful study of the administrative organization of the Cleveland schools. The committee concluded a long report to the board with the following statement : ²

The Board of Education should establish, as soon as reasonably possible, single-headed executive management of the school system, preferably by setting up a commissioner of education, as outlined in the report, to have general supervision of, and responsibility for, the operation of the school system, subject to the advice and control of the Board of Education.

CONCLUSION

If business practices are essentially alike in both types of cities, if no financial economies result from the multiple type of control, if the administrative and personal relationships in

¹ Bureau of Municipal Research, New York, *Report of a Survey of the Organization and Administration of the Public Schools of Harrisburg, Pennsylvania*. (Telegraph Printing Company, Harrisburg; 1917.)

² *Proceedings of the Cleveland Board of Education*, Vol. 44, pages 323-333.

multiple-type cities are such as to hamper the realization of the chief objective of public education, and if functions are performed in the same manner in both types of cities, but one conclusion is inevitable. That conclusion is this: There should be for a city school system unified administrative control centered in one executive officer whose point of view is primarily educational.

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GERWIG, GEORGE W. "Should the School Secretary Be under the Direction of the Superintendent?" *American School Board Journal*: Vol. 69, No. 3, page 53 (September, 1924).

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HAMMELBAUGH, D. D. "Reorganization of the Public School Business System of a Small City," *American School Board Journal*: Vol. 57, No. 1, page 29 (July, 1918).

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KEOUGH, WILLIAM T. "School Board Organization in the Larger Cities," *American School Board Journal*: Vol. 65, No. 1, page 39 (July, 1922).

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STRATER, GEORGE D. "Relation of Administrative Officers to Boards of Education," *American School Board Journal*: Vol. 65, No. 2, page 37 (August, 1922).

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Recites deficiencies of divided control in maintenance of school plant.

— *Report of the Survey of Certain Aspects of the Public School System of Springfield, Massachusetts* (School Year 1923-1924). Teachers College, Columbia University, New York.

Points out difficulties encountered in divided control of school buildings, school finance, and school health department.

— *Report of the Survey of the Public School System of Baltimore, Maryland*: Vol. II, "The Administration of the Public Schools."

Reviews the functioning of the multiple type of administrative control found. Recommends unified control.

STUDEBAKER, J. W. "School Board Organization and the Superintendent," *American School Board Journal*: Vol. 68, No. 4, page 37 (April, 1924).

Argues for unified control but insists that superintendent must know financing and schoolhouse construction. A clean-cut article.

WIVEL, C. B. "The Business Manager in the Public Schools," *American School Board Journal*: Vol. 69, No. 5, page 69 (November, 1924).

Insists that the business manager be subordinate to superintendent and outlines qualifications for that officer.

CHAPTER FIVE

SCHOOL BUDGETARY PROCEDURE

ADMINISTRATORS and laymen alike have fancied that budget making is a complicated and intricate process — of use only when a multitude of activities require the expenditure of vast sums of money. As a matter of fact, the processes involved in formulating a budget and supervising its administration are relatively simple and easily followed once they are clearly comprehended. Furthermore, a budget is an essential part of the financing of any enterprise which involves the expenditure of funds. Hence, a knowledge of current practices and desirable procedures is not only desirable but necessary for the school administrator.

A budget, in general, is a document that sets forth for some definite period of time an activity and expenditure program, together with a plan for raising the necessary revenue. It may be an extensive record like the Federal budget or a simple one such as a family of moderate means might prepare. But, whatever its size, its essential characteristics and fundamental purposes are always the same.

Dr. Cleveland defines a budget thus:¹ "A budget is a plan for financing an enterprise or government during a definite period, which is prepared and submitted by a reasonable executive to a representative body (or duly constituted agent) whose approval and authorization are necessary before the plan may be executed." Dr. Buck, of the Bureau of Municipal Research, states that "the budget, in the strict sense of that term, is a complete financial plan for a definite period, which is based upon careful estimates both of the expenditure needs and of the probable income of government."²

¹ F. A. Cleveland, quoted by C. E. Rightor in "Recent Progress in Municipal Budgets and Accounts," *National Municipal Review*: Vol. 5, pages 403-410 (July, 1916).

² Arthur E. Buck, *Budget Making*, page 2. (D. Appleton & Co., New York; 1921.)

Some writers would add to these definitions to make a budget the work program of an individual, corporation, or government, together with a spending and a financing program. The added feature of the work program strengthens the budget by presenting concretely the objects for which the expenditures are designed.

PROVISIONS IN THE SCHOOL BUDGET

A school budget may be defined as a plan submitted to a board of education by its executive officer and setting forth an educational program, the expenditures involved in carrying it on, and the sources of the revenue needed. It may be a very simple plan such as might characterize a village school, or it may be the complicated budget of a metropolitan system with its multitude of children and varied activities. The essential parts of such different budgets are the same, however.

Three essential features are included in a school budget: first, an educational program; second, a spending program based on the educational program; and third, a financing program designed to raise the necessary funds. A school budget implies considerably more than a mere spending program; it comprehends the whole educational program as well. It looks forward to programs projected for the future as well as to that of the current year. Additional buildings, extensions of educational offerings, and changes in policies will be anticipated — not one or two years in advance but several years.

The educational program. The educational program is not infrequently taken for granted. It is assumed that a school system is a going concern and must be financed to maintain its *status quo*. Extensions of the existing program alone receive specific mention. As a matter of fact, the budget affords an excellent opportunity for exhibiting in detail the whole range of educational activities. Such a presentation of the whole picture of the entire range of a community's educational

activities strengthens whatever arguments are advanced for the approval of the budget. Annually calling attention, on the other hand, to extensions and new features alone leads the lay mind to think that scant attention is given to the more fundamental aspects of the school program. In reality the major portion of the school budget is expended in training the great mass of children in the so-called "fundamentals." Adequate presentation of the entire program shows the various educational activities in their proper perspective. The detail with which this program is presented rests largely on the executive officer who prepares the budget. He should, of course, exercise sound discretion in placing emphasis where it is most needed.

The expenditure program. The expenditure program should outline in detail the appropriations necessary for realizing the educational program. The items should be classified first on a functional, or activity, basis. The usual classifications are General Control, Instructional Service, Operation, Maintenance, Fixed Charges, Auxiliary Agencies, Debt Service, and Capital Outlay. Under each of these a variety of subdivisions may appear; for example, Instructional Service may be divided into Salaries of Supervisors, Salaries of Principals, Salaries of Teachers, Textbooks, and Instructional Supplies. A further subdivision may be Day Schools and Night Schools, and under each of these Elementary, Secondary, and Vocational divisions. The essential thing is that the budget recognize clearly the different functions to be performed and classify the proposed expenditures according to the specific objects for which they are intended.

The financing program. To secure the funds necessary for carrying on the educational program, the budget must outline a financing program which will produce enough revenue to equal the expenditures. It should indicate in detail the

revenues anticipated from all sources. Where a tax levy must be made, the budget should indicate the amount of this levy. If different funds are utilized, the amount to be raised from each fund should appear together with the tax levy necessary. The total amount of this revenue must equal the expenditures; and good financing would indicate the desirability of providing in addition a surplus to offset tax money not collected and to provide against contingencies.

THE BUDGET CYCLE

Budgetary procedure is a process which goes on continuously in one form or another. Any proposal to extend the educational offerings becomes a problem of budgeting, because the expenditure of funds is involved. Any request for equipment is likewise a matter for the consideration of the budget maker.

Cycles, which include the activities involved in budgetary procedure, have been worked out by various writers. The cycle outlined by Buck comprises the following activities: (1) recording of information, (2) preparation of estimates, (3) examination and careful weighing of estimates, (4) formulation, (5) review, and (6) adoption.¹

Moore has also prepared a cycle which includes the full period rather than the period of preparation and adoption.² The various steps are (1) collecting information, (2) classifying information, (3) drafting the budget, (4) presenting and adopting the budget, and (5) administering the budget.

The writer proposes a simple cycle which, when expanded, comprehends the full range of activities. It is (1) preparation of the budget, (2) adoption of the budget, (3) administration of the budget. The discussion which follows is based on this cycle.

¹ *Op. cit.*, page 324.

² Quoted by Benjamin F. Pittenger in *An Introduction to Public School Finance*, page 48. (Houghton Mifflin Company, Boston; 1925.)

PREPARATION OF THE BUDGET

The preparation, the adoption, and the administration of the budget constitute, next to supervision of instruction, the most important cycle of activities of the superintendent of schools. From at least one point of view they may even constitute the most important group of activities. When it is borne in mind that on the budget depends the entire educational program, its importance becomes evident. No activity can exist for which provision has not been made in this document.

The preparation of the budget is not an activity of a day, a week, or a month, nor is it the work of a single individual such as the superintendent of schools or the business manager. A properly constructed budget is the result of the activities of a large number of individuals who have each contributed in some manner to its formulation.

Responsibility for budget making. The first question that arises is: Who is primarily responsible for the budget in final form? This question can be answered both from the standpoint of the theory of educational administration and from the standpoint of actual practice in a group of cities.

If the superintendent is responsible for the successful administration of the educational program of the schools, then it is only good logic to make him responsible for the program of expenditures and financing involved. In a large city he will in turn delegate the activities involved in budget making to an assistant, while in a small city he may handle the work himself with clerical assistance only. A board of education, a committee of the board, or an independent business executive may be responsible under the rules of the board, but it is difficult to defend such a procedure if the superintendent is to be held responsible for the educational program and its success. On the other hand, the actual practice of cities may vary considerably from this theoretical principle.

The following table shows where responsibility for budget making is placed in twenty-five large Eastern cities. These figures the writer obtained by visits to the cities.

TABLE 9
RESPONSIBILITY FOR THE BUDGET IN ITS FINAL FORM

RESPONSIBLE BODY	NUMBER OF CITIES
Superintendent of schools	10
School board, secretary, or business manager . .	10
Secretary or business manager coördinate with the superintendent	5

Emerson found in a study of 212 cities that 43 per cent of the superintendents were fully responsible for this activity. In 28 per cent of the cities there was joint responsibility, while in the remaining 29 per cent some other executive officer or a board committee was responsible. In some communities the board as a whole may assume this function.¹ It is seen that practice in these cities varies widely as far as ultimate responsibility is concerned. When an independent secretary or business manager is vested with the duty of preparing the budget, the superintendent contributes the purely educational items. Where the two are coördinate, each submits his own estimate directly to the board of education. Such a plan not infrequently results in a conflict between the business and educational departments, with the board sitting as arbiter.

It has been stated that budget making is a continuous process. The executive officer and those responsible with him for the budget should keep during the year a more or less systematic record of needs for the next fiscal period. This may consist of a budget book, a budget card file, or a folio into

¹ Wallace Emerson, "School Budgets and Budget Procedure," *American School Board Journal*: Vol. 70, No. 5, page 39 (May, 1925); Vol. 70, No. 6, page 55 (June, 1925); Vol. 71, No. 1, page 51 (July, 1925).

which loose sheets of paper can be inserted at any time. Whenever an item comes to the attention of one of these individuals, it can be entered on his own budget record or filed with the budget items in the central office.

Participation in making the budget. The question now arises: What members of the staff should actually take part in preparing a budget? This question is answered for the twenty-five cities studied in the foregoing table, by the following figures:

TABLE 10
MEMBERS OF THE STAFF WHO ACTUALLY PARTICIPATE IN THE
MAKING OF THE BUDGET

MEMBER OF STAFF	NUMBER OF CITIES
Superintendent of schools	25
Business executive or secretary of the board	20
Supervisors	15
Principals	15
Superintendent of building and grounds	13
Building custodians and engineers	3
Assistant superintendents concerned with instruction	3
Special teachers	3
Classroom teachers	2

A great variety of practice appears here, ranging from participation by the superintendent and one or two other members of his corps to a set-up which permits every teacher, supervisor, and principal to have a part. In nineteen of the cities participation by teachers and custodians is limited to making up lists of supplies which they use. In seven cases, however, it extends to requisitioning equipment, suggesting extensions of the teaching staff, and listing needed repairs.

In a very large city the budgeting of capital outlay items is itself so complicated that it may be placed in the hands of a member of the superintendent's staff who is a school-housing

expert. New schools, additions to existing schools, and new equipment all require such detailed and expert attention that not infrequently a separate department is maintained for the purpose of providing for these items. When such a department exists, it is responsible for the capital outlay portions of the budget.

The budget calendar. In a school system of any size a budget calendar facilitates the preparation of the budget. This calendar consists of a list of the things to be done, of persons by whom they are to be done, and of the times when they are to be done. The submission of maintenance items and their checking, the compilation of supply lists, and the determination of changes in the educational program are illustrations of the activities which should be handled at definite times during the fiscal year in anticipation of the compilation of the budget. Each school system should work out its own calendar to fit its needs.

Reviewing budget requests. It is of course imperative that a review be made of the items submitted by various members of the staff. The methods used in reviewing these requisitions in twenty-four of the cities previously included are as follows:

TABLE 11

REVIEW OF BUDGET REQUESTS IN TWENTY-FOUR CITIES

PERSON RESPONSIBLE FOR REVIEWING BUDGET ITEMS	NUMBER OF CITIES
Superintendent of schools	23
Business executive alone	1
Business executive in addition to superintendent of schools	9
Superintendent of building and grounds in addition to superintendent and business executive	2
Purchasing agent in addition to superintendent . .	2

This table shows that ample facilities are provided for an

adequate review of the items submitted by the various members of the staff.

Participation, even though the work of the individual is subject to careful review, means that the budget becomes a working program not alone for the executive officers of the system but for every member of the organization who has contributed to its formulation. Such participation leads the individuals to look ahead to discover their needs, to become interested in securing the most for their money, and to feel keenly the necessity of keeping their portions within the limits they themselves have helped set up.

Estimating expenditures. Two methods are used in estimating expenditures — the unit-cost method and the lump-sum method. In the former, the budget builder computes a series of unit costs for the preceding year or several years, estimates the number of like units for the year the budget is designed to cover, and arrives at the amount of money needed by multiplying the unit cost by the estimated number of units, making necessary additions. These units may range from those containing no subdivisions at all to ones with minute divisions of expenditures. For example, the unit may be the cost per child in average membership; it may be the cost per child in attendance in each instructional division; or it may be the cost per child in each subject pursued.

The second method consists of adding the amounts spent for various objects and services during the preceding period or periods to the increases that are necessary. Theoretically, the unit-cost method appears the sounder. As a matter of fact, however, every one of the twenty-five cities visited by the writer used the lump-sum method. Only one city supplemented that with the unit-cost method.

There is apparently a very practical difficulty in using unit costs exclusively. Such a method presumes an increase in expenditures exactly proportional to an increase in the num-

ber of pupils to be educated. As a matter of fact, the situation does not work out that way. An increase of thirty pupils in the elementary schools, for example, may be absorbed with comparative ease without opening up a new room or adding a teacher to the staff; even two hundred pupils may be absorbed without opening up a new building with its staff of five or six teachers. Neither situation requires a proportional increase in the budget. The lump-sum method, which is not based on per-pupil costs, would not imply such proportional increase.

Perhaps the most practical use of unit costs is to determine for a large number of school systems the unit costs on comparable items. The central tendency and the quartile deviations will then constitute guides by which the budget maker may gauge his own estimates. Any great variation from the middle 50 per cent will thus require careful analysis. Unit costs serve a useful purpose also in budgeting equipment, textbooks, and instructional supplies. Thus a combination of the two methods probably represents the most effective practice in budget making.

While it may seem advisable, theoretically, to include in the budget the expenditures for several preceding years, not one city of the twenty-five visited by the writer followed that plan. The reason offered for not doing so was that school expenses were continually increasing, both in the aggregate and on a unit basis. To show this over a period of years would create an unfavorable attitude on the part of the reviewing body, the voters, or the public. The prevailing practice, therefore, was to list only the expenditures for the closing fiscal year.

Proper budget proportions. A matter of no small moment is the proper percentage of the budget to allocate to each item. It is impossible to specify a fixed proportion for each, since conditions vary from year to year.

It is possible, however, to lay down a general principle to be followed. The ratio of each functional division of the budget — that is, General Control, Instructional Service, Operation, Maintenance, Fixed Charges, and Auxiliary Agencies — to total Current Expense should be within the items of the middle 50 per cent of cities in the entire country which correspond in size and similarity of problems. The study made by the National Committee for Chamber of Commerce Cooperation with the Public Schools and the American City Bureau gives percentages for all cities of more than eight thousand which reported to them.¹ These are reproduced in Table 12.

TABLE 12

PER CENT OF FUNCTIONAL DIVISION OF EXPENDITURES IN AMERICAN CITIES ABOVE EIGHT THOUSAND

FUNCTION	MEDIAN	Q ₁	Q ₃
General control	4.4	3.3	5.7
Instructional service	74.3	70.0	77.0
Operation of plant	12.8	11.0	15.0
Maintenance of plant	4.1	2.75	6.0
Fixed charges	1.1	0.5	2.0
Auxiliary agencies	1.7	0.8	3.0

Applying the principle previously stated, a city should attempt to keep the proportion budgeted for Instructional Service between 70 and 77 per cent. The same statement would hold true with respect to the other budget divisions. Of course, unusual conditions might arise which would require a departure from this. The budget makers should then be in a position to defend such an unusual situation. Current data

¹ *Know and Help Your Schools, Third Report*, pages 26-28. (American City Bureau, New York; 1921.)

may be secured by those interested from the financial reports issued biennially by the United States Bureau of Education and by the Research Division of the National Education Association.

Some variation in percentages expended under the various functional divisions exists among cities of all sizes located in the different sections of the country. Table 13 summarizes

TABLE 13

COMPARISON OF CITIES OF DIFFERENT REGIONAL GROUPS AS TO PER CENT OF TOTAL CURRENT EXPENDITURES DEVOTED TO EACH OF SEVERAL FUNCTIONAL DIVISIONS OF THE BUDGET, 1925-1926

	RANGE		MIDDLE FIFTY PER CENT		MEDIAN	AVERAGE
	Low	High	Low	High		
General control:						
Western	.2	8.5	3.4	4.6	4.0	4.0
North Central	.1	6.3	3.1	3.9	3.6	3.7
Eastern	.1	10.8	2.6	4.2	3.3	3.4
Southern	.2	10.0	3.2	4.7	4.1	4.2
Instruction:						
Western	70.6	87.2	76.6	82.3	79.8	79.4
North Central	66.7	83.4	72.0	76.4	74.4	74.2
Eastern	66.0	83.5	73.3	78.7	76.0	76.3
Southern	63.8	90.2	78.1	83.8	81.5	80.2
Operation of plant:						
Western	2.3	20.0	8.0	12.3	9.0	9.8
North Central	7.5	19.2	11.2	13.9	12.8	12.6
Eastern	3.9	15.8	9.4	12.0	10.8	11.0
Southern	2.3	17.8	6.8	9.3	7.8	8.8
Maintenance of plant:						
Western	.9	6.9	2.0	4.4	3.0	3.3
North Central	.9	9.1	2.9	5.4	3.9	4.3
Eastern	1.1	14.7	3.4	5.7	4.4	4.6
Southern	1.5	7.3	2.2	4.9	3.2	3.6
Auxiliary agencies:						
Western	.2	5.9	.9	3.2	1.8	1.9
North Central	.6	10.7	1.4	3.7	2.5	2.7
Eastern	.2	12.7	2.4	3.8	2.8	2.0
Southern	.1	11.5	.7	2.1	1.4	2.3
Fixed charges:						
Western	.1	3.0	.5	1.7	1.2	1.2
North Central	.2	11.7	1.0	3.0	1.9	2.2
Eastern	.1	8.9	.4	3.8	1.9	2.1
Southern	.1	4.6	.7	2.9	1.4	1.6

the variations for different sections of the country ;¹ Table 14 gives similar statistics for cities of three different sizes.²

TABLE 14
MEDIAN PER CENT OF FUNCTIONAL DIVISIONS OF CURRENT EXPENSE
CLASSIFIED BY SIZE OF CITY

	SMALL 8,000-29,999	MEDIUM 30,000-99,999	LARGE 100,000 and more
General control . . .	4.9	3.8	3.6
Instructional service . .	72.8	75.1	77.4
Operation of plant . .	13.5	12.2	11.4
Maintenance of plant . .	3.8	4.8	4.1
Fixed charges	1.2	1.1	0.8
Auxiliary agencies . .	1.6	1.8	1.8

Estimating income. Once the items of expenditure are prepared, the estimate of income follows readily if the budget does not involve the exceeding of statutory or constitutional limits. To be complete, the budget must contain an accurate estimate of the revenue anticipated from various sources. A clear distinction should be made between the revenues that come from sources outside the local taxing unit and those for which tax levies must be made by the board of education or the municipality. For the latter, the necessary levies in the various funds should be carefully computed. The classification suggested by the United States Bureau of Education follows :

1. Income from permanent funds
2. Income from leases of school lands
3. General, specific, and emergency appropriations
4. Income from taxation for maintenance purposes, including debt obligation

¹ Data compiled by author from *Statistics of City School Systems, 1925-1926* (Bulletin, 1927, No. 32, of the United States Bureau of Education). Data are from practically all cities above thirty thousand in population and from a sampling of the smaller cities.

² *Know and Help Your Schools, Third Report*, page 26. (American City Bureau, New York; 1921.)

5. Income from taxation for debt service
6. Income from other school districts for tuition
7. All other revenue receipts
8. Non-revenue receipts :
 - (a) From loans and bond sales
 - (b) From sales of property and proceeds of insurance adjustment
 - (c) Other non-revenue receipts

In order that the revenues raised may equal the expenditures authorized, it is imperative that a careful study be made of the trend in local assessments over a period of years. Likewise the ratio of amounts collected to amounts certified to be raised by local levies should be known for a similar period. Frequently a part of the revenue anticipated from the personal property tax is never collected, due to a variety of causes. Finally, the trend in income from other than local taxation should be ascertained. Ample provision should then be made in the light of the foregoing against incurring any deficit.

The working budget. How detailed should a budget be? Practice varies greatly. Of two Eastern capital cities of approximately equal size, one has a budget that comprises scarcely more than one printed page and carries but twenty different subdivisions. The budget of the other covers forty-one closely typewritten pages and comprises hundreds of subdivisions. Both budgets are the actual working budgets of these cities.

No definite rule can be stated which will indicate finally the detail with which budgets are worked out. No one form can be used by all cities or under all conditions. A general principle the budget maker should apply is that the subdivisions should be such as to form the basis of the controlling accounts of the school accounting system. If the budget is prepared in brief form, it is usually necessary to rearrange it after adoption into a so-called "working budget" which carries the

items in sufficient detail so that they form the basis of the controlling accounts.

The local situation usually determines the plan to be followed. If a budget must be submitted to a common council, a city commission, or a town meeting, it is undoubtedly good policy to present the larger divisions only. Exhibiting the numerous smaller items may lead to endless discussion of relatively insignificant matters and a complete disregard of the larger issues. The budget actually to be used by the staff, however, should include a large number of items so that expenditures will be carefully controlled.

It goes without saying that all items should be included in a budget though they do not need to be listed in detail. There should be no "padding," that is, making of estimates in excess of actual needs with the hope that a "cut" will still leave enough to meet the need. A budget should be prepared on the basis of actual needs only, and its builders should be prepared to defend their requests without resorting to this sort of device which results in a lack of confidence and respect for the budget maker. Absolute sincerity is imperative.

Time of preparation. The budget should be completed prior to the opening of the fiscal year it is designed to cover, and it should be adopted by the board and passed upon by the reviewing body prior to the time it becomes operative. Actual practice, however, does not always coincide with this theory. Dr. Twente found that 32 per cent of the cities giving the United States Chamber of Commerce information on this point adopted the school budget after the beginning of the fiscal period.¹

Form of the budget. The form of the budget varies widely. The following table shows the forms used in twenty-five Eastern cities:

¹ John W. Twente, *Budgetary Procedure for a Local School System*, page 35. (Published by the author, University of Kansas, Lawrence, Kansas; 1923.)

TABLE 15
FORM OF BUDGET IN TWENTY-FIVE EASTERN CITIES

FORM	NUMBER OF CITIES
Schedule of city budget, or traditional schedule followed	9
Schedule based on individual school buildings, or types of schools; i.e., elementary, secondary, etc.	5
Standard functional schedule with objects designated	5
Standard state form based on functional schedule with objects designated	6

Fewer than half the cities follow a functional plan. In other words, actual practice lags far behind our knowledge of budgetary procedure.

ADOPTION OF THE BUDGET

Responsibility for adoption. After the budget is drafted, the next step is to secure its adoption. This action may be taken by the board of education alone, by the board of education subject to some municipal or county body, or by the community itself through a public meeting. Table 16, taken from Dr. Twente's *Budgetary Procedure for a Local School System*,¹ shows where the responsibility rests for adopting the budget in cities having populations of more than eight thousand and located in different parts of the country.

Fiscal independence vs. fiscal dependence. The cities whose school budgets are not subject to review by some other governing body are known as "fiscally independent cities"; those whose school budgets are subject to such review are designated as "fiscally dependent cities." There are also many cities intermediate between these two types. The supporters of fiscal independence argue that, since education

¹ *Op. cit.*, pages 44-46.

is a state function, no governmental unit other than the state should exercise any control. The proponents of fiscal dependence insist, on the other hand, that since education is supported mainly from local taxation, a body representing the citizenship of that taxing unit should review all budget estimates to make sure that no one tax-supported enterprise draws more than its fair share of the public funds.

TABLE 16

BODIES OTHER THAN BOARDS OF EDUCATION THAT REVIEW CITY SCHOOL BUDGETS

REVIEWING BODY	NUMBER OF CITIES REPORTING	PER CENT OF CITIES HAVING PRACTICE INDICATED
School board has final authority as to the amount of the budget except as limited by state and city charter regulations	357	49
Mayor has power to veto the budget	273	10
Budget is subject to review by finance committee, town finance board, or finance committee and mayor .	187	9
Budget is subject to review by board of estimate or board of school estimate	187	14
Budget is subject to review by the mayor and city government . . .	187	30
Budget is subject to review by budget commission	187	16
Budget is subject to review by representatives of county government .	187	18

Fiscal independence *vs.* fiscal dependence has been studied objectively by two writers, G. W. Frasier¹ and James R. McGaughy.²

¹ G. W. Frasier, *The Control of City School Finances*. (Bruce Publishing Company, Milwaukee, Wisconsin; 1922.)

² James R. McGaughy, *The Fiscal Administration of City School Systems*. (The Macmillan Company, New York; 1924.)

Frasier's study consisted of an attempt to measure in objective terms the progress made by schools operating under the plan of fiscal independence, as compared with that made by schools operating under the alternative plan. For this purpose he developed an "index number" to represent, in a single measure for each school system, its relative standing in all the following matters: (1) per cent of sixteen- and seventeen-year-old children in school; (2) per cent of elementary classes having fewer than forty children enrolled; (3) per cent of children having sixty or more square feet of playground space; (4) per cent of teachers having six or more years of training above the eighth grade; (5) per cent of children enrolled who attend school all day in adequate buildings owned by the city; and (6) per cent of the increased cost of living from 1913-1914 to 1919-1920 that was met by increased salaries for elementary women teachers. The details of the elaboration of this index number are presented in full by the author but need not be repeated here.

The proper index number was found for each one of the school systems in one hundred and sixty-nine cities, including seventy-one in which the schools were dependent in financial matters, and ninety-eight in which they were independently organized. Comparison of these index numbers shows that "no city having a fiscally dependent school system surpasses the third quartile" of the group of independent systems. "The correlation between fiscal dependence and the index numbers was found to be $-.28$ There is a distinct tendency for fiscally independent school systems to have higher index numbers than fiscally dependent systems. This holds true for cities of different size and geographical location."¹

If one accepts Frasier's index number as a true criterion of educational efficiency, then there can be little doubt that fiscal independence makes for school progress.

McGaughy's study is based upon detailed data from three hundred and seventy-seven American cities. Classification of these cities according to dependence or independence of school boards in fiscal matters, and according to size and regional location, brought out the interesting fact that the dependent type of organization is more frequent in Eastern cities and in cities of over one hundred

¹ Quoted from Benjamin F. Pittenger's *An Introduction to Public School Finance*, pages 188-189. (Houghton Mifflin Company, Boston; 1925.)

thousand population. The study also developed a specialized technique for comparing averages and medians, known as the "critical ratio."

This technique was applied to twenty-four financial factors and to the six educational factors studied by Frasier. Cities of the independent type lead in nine of the fourteen financial factors and in four of the five educational factors. An important financial conclusion, however, is that a city's average expense per child is in no way affected by the fact of the independence or dependence of its board of education with respect to the municipal authority of that city.

Either type of city is equally generous in the matter of total per-pupil expenditure for schools. Independent organization, however, tends to provide more liberally for capital outlays and school indebtedness, resulting in increased adequacy of buildings and playground space. Dependent organization, on the other hand, seems to encourage large expenditures for instruction, and to hold a larger percentage of trained teachers in the school system.¹

Publicity and the school budget. Whether the board of education is the final authority in the adoption of the budget or is dependent on some reviewing body, publicity regarding the budget is desirable. In the last analysis, it is the citizenry of the community that must be satisfied. Such publicity may take the form of public hearings — particularly in those cities where the town meeting passes on the items; wide use may be made of newspaper publicity. The school budget always constitutes a news item of great interest to the citizens. The board's house organ, if there is one, may be used in the community. Finally, the budget itself, with arguments for its passage, may be published and distributed through the school district.

The most fundamental requisites, of course, of any appeal to the public are sincerity and honesty. With a well-directed program of publicity for a budget which has been carefully and honestly prepared, the public is almost certain to

¹ *Op. cit.*, pages 189-190.

support its adoption and to express displeasure at undue cutting.

ADMINISTRATION OF THE BUDGET

Responsibility for its administration. The administration of the budget should be under the direct supervision of the executive officer responsible for its making. In that way only can there be a desirable correlation between the building of the budget and its execution. All who share in its building should also share the responsibility of carrying it out. It then becomes a vital force in determining policies rather than a mere mechanical performance that has no other significance than its construction.

Once it is adopted, the budget becomes, according to Dr. Frank E. Spaulding, "the most influential factor in educational procedure. It determines organization, methods, and results; the size of classes; means and materials of education; educational values; in fact, no phase of education escapes the influence of the budget."¹ These things it does through its control of the finances of the school system.

Checking expenditures with appropriations. If the budget is to be a vital factor in controlling school expenditures, the accounting system must be so set up that the budget appropriations are properly controlled. The ideal arrangement for securing an adequate control is, obviously, checking a proposed expenditure with the unencumbered balance in the proper appropriation account before the expenditure is made. Several methods of doing this are used, such as a budget ledger, appropriation accounts in the general ledger, ledger cards carrying the appropriation accounts, and heading the columns in the subsidiary distribution ledger with their

¹ Frank E. Spaulding, "The Making of a School Budget," *School Review*: Vol. 26, pages 684-695 (November, 1918).

respective appropriations. The practices characteristic of twenty-five cities are shown in the following table:

TABLE 17
METHODS OF CARRYING BUDGET-APPROPRIATIONS ACCOUNTS IN
TWENTY-FIVE EASTERN CITIES

METHOD	NUMBER OF CITIES
Account-column heading in subsidiary expense-distribution ledger	11
General ledger accounts	5
General ledger accounts and first method combined	4
Budget ledger or ledger cards	3
No accounting control	2

It will thus be seen that practice varies widely. Furthermore, in the first group several cities have their accounting systems on an accrual basis so that the item is charged against the proper appropriation prior to making a purchase.

The method of keeping the books is of more significance than the precise form in which the accounts are kept. To have an accurate check it is necessary that the accounting system be established on an accrual basis; that is, that the appropriation account be charged *at the time the obligation is incurred* rather than at the time the vender's invoice is paid. This is the only way in which the person supervising the budget can be sure that his appropriations are not exceeded. If this method of procedure is not feasible, then the next best method is to enter a charge temporarily against the appropriation when a purchase is authorized, letting the transaction proceed in the usual way until the final entry is made after the payment of the invoice. Some such check is absolutely necessary if the many departments in the modern school system are to keep their expenditures within the bounds of their appropriations.

Surplus and deficit. Theoretically, no deficiency should exist either in the budget as a whole or in specific appropriation accounts. Practically, emergencies arise from time to time causing a given appropriation to be exceeded. This deficit can be met by providing an unappropriated balance, by transferring from one appropriation account which has a surplus to the one which has a deficit, or by creating an emergency fund. It is evident that any school budget should possess enough elasticity to meet unforeseen expenditures if they are not excessive.

Neither a large surplus nor a deficit is to be desired. Returning a large unexpended balance is apt to give the impression that the individual constructing the budget asked for an excessive amount. The possible result of such a situation is that subsequent requests will be "trimmed." On the other hand, a deficit is apt to be taken as conclusive evidence of bad financing.

TYPICAL SCHOOL BUDGETS

Two forms of budgets are presented herewith. The first is a school budget which is part of the municipal budget of a large Eastern city. The second is the board of education budget prepared by the author for a small, fiscally independent city in the Middle West.

The following budget is part and parcel of the city budget, with which it is published after adoption by the board of education and approval by the city council. After publication it is not transformed into a "working budget" carrying the items in greater detail, but serves for the entire year in the form shown here. It represents a form in frequent use by cities and towns in which the schedule of accounts is that of the municipality of which the school system is conceived to be a part. The brevity of this budget in contrast with that of the fiscally independent city which follows is to be noted.

110 BUSINESS ADMINISTRATION OF PUBLIC SCHOOLS

EDUCATIONAL BUDGET FOR A LARGE EASTERN CITY

I.	Salaries of teaching force	\$1,029,150.00
	Less state appropriation	259,800.00
	Net appropriation	769,350.00
II.	Office force	
	Superintendent of school buildings	3,200.00
	Requisition clerk	1,850.00
	Attendance officers (3)	4,975.00
	Evening and part-time schools	600.00
III.	Janitor force	70,254.00
IV.	Maintenance of truants and traveling expenses	750.00
V.	Library and apparatus	2,200.00
VI.	Repairs and heaters	15,000.00
VII.	Playgrounds and apparatus	5,000.00
VIII.	Supplies	22,000.00
IX.	Health direction and dental supplies	
	(Salaries under I)	700.00
X.	Textbooks	22,000.00
XI.	Miscellaneous	7,000.00
XII.	Printing and advertising	3,500.00
XIII.	School furniture	6,000.00
XIV.	Fuel and removal of ashes	45,000.00
XV.	Gas, electric light, and power	9,000.00
XVI.	Vocational schools: Supplies and equipment	11,000.00
	Part-time school	6,000.00
	Total	<u>\$1,005,379.00</u>

The budget reproduced on the following pages was prepared for a board of education in a fiscally independent city. It is constructed on a functional basis. It forms a good working budget from which the controlling accounts can be set up, and is a form easily defended before boards of education.

BOARD OF EDUCATION BUDGET

INCLUDING

1. THE EDUCATIONAL PROGRAM
2. THE SPENDING PROGRAM
3. THE FINANCING PROGRAM

THE EDUCATIONAL PROGRAM

The educational program proposed should offer next year, as last year, kindergarten, elementary school, and secondary school training.

It is proposed to offer kindergarten work on a full-year basis as last year. The elementary school training should include the regular academic subjects taught by well-trained teachers, together with attention to health, recreation, physical efficiency, and properly supervised study. This unit of the school system should stress music and art as well as provide for the education of badly retarded children and those possessing special disabilities. Such a program implies the proper machinery for diagnosing pupils' difficulties and for supervising the instruction given.

The secondary school program is represented by the junior and senior high schools. These units should offer the usual academic work, providing at the same time for such a classification of pupils that maladjustments will be reduced to a minimum. This implies an extension of the grouping of pupils now being practiced in the junior high school and the ultimate installation of a plan of educational guidance, handled by an expert especially trained for this work.

The junior high school should continue to offer its pre-vocational shop and commercial work together with its guidance and finding work in home making, music, art, and commercial work. The health and physical training program of both units should be extended so as to include, ultimately, every boy and girl. The senior high school program should offer, in addition to the so-called academic subjects, vocational work in commerce, household arts, and agriculture. In addition, the physical training is to be extended to include all juniors, and beginning German will be offered.

Certain auxiliary activities should be mentioned. The nurse and dental service should be continued on their present basis. There should be the usual addition to the school libraries with a slight addition for the junior high school library. The self-supporting lunch service of the senior high school should be continued.

The short-unit evening classes proved so popular last year that they should be continued on the same basis this year. The only expenditure for which the local school system is responsible is the operation of the buildings, the salaries being paid by the state.

Two extensions of educational service should be contemplated by the Board of Education and the community for the future. The first is the adoption of a tax-supported recreational program on a twelve-month basis. The state statutes provide that all cities may make certain levies for the maintenance of such a program. The privately supported programs of the past have broken down and there is a continuous and insistent public demand for such a program on a tax-supported basis. The employment of a man to handle the colored boys is a move in this direction.

The second is the addition of a "visiting teacher" to the staff at an early date. It would be the function of this teacher to form a closer connecting link between the home and school, performing a type of service which neither the attendance officer nor the nurse can perform. This teacher must be specifically trained for this type of work. The conservation of human effort and improvement of social conditions resulting will prove a splendid investment for the community. At least one city in this state employs such an individual.

The budget herewith submitted includes all of the program here outlined except the educational guidance expert, the twelve-month recreational program, and the "visiting teacher." These will be recommended in subsequent budgets.

The schedule of accounts in this budget is based upon the schedule of the United States Bureau of Education's *Uniform School Accounting Report for Cities of 100,000 or More*, with certain modifications.

THE SPENDING PROGRAM

BRIEF STATEMENT OF BUDGET 1926-1927

BUDGET ITEMS		1924-1925 SPENT	1925-1926 BUDGET	1925-1926 SPENT	1926-1927 BUDGET
B I	General control (regulative and executive service)	\$ 13,081.85	\$ 12,600.00	\$ 12,108.94	\$ 13,020.00
B II	Instructional service	171,241.41	179,880.00	176,322.08	187,200.00
B III	Operation of school plant	32,151.50	32,750.00	32,317.12	32,750.00
B IV	Maintenance of plant	7,077.05	10,000.00	9,500.05	13,500.00
B V	Fixed charges	2,005.81	1,750.00	1,969.99	2,000.00
B VI	Auxiliary agencies	8,696.28	8,875.00	7,557.90	9,000.00
	Current expense	\$234,253.90	\$245,855.00	\$239,776.08	\$257,470.00
B VII	Capital outlay	76,692.29	7,550.00	6,091.59	112,000.00
B VIII	Debt service	43,915.00	52,500.00	47,640.36	52,500.00
	Grand Total	\$354,771.19	\$305,905.00	\$293,508.03	\$421,970.00

DETAILED STATEMENT OF BUDGET 1926-1927

B I GENERAL CONTROL (Regulative and Executive)		1924-1925 SPENT	1925-1926 BUDGET	1925-1926 SPENT	1926-1927 BUDGET
B I-1	School elections (regular)	\$	\$ 500.00	\$ 418.07	\$ 500.00
I-2	Board of Education and office of secretary — salary	1,299.96	2,000.00	1,991.60	2,000.00
I-3	Board of Education and office of secretary — supplies	179.57	250.00	283.12	250.00
I-4	Office of treasurer — salaries	150.00	150.00	150.00	150.00
I-5	Superintendent of buildings and grounds	2,030.23	1,600.00	1,546.64	1,600.00
I-6	Other expenses of business control	600.00	600.00	600.00	600.00
I-7	Superintendent's office — salaries	5,425.71	5,650.00	5,721.46	5,850.00
I-8	Superintendent's office — supplies	352.51	400.00	472.49	500.00
I-9	Superintendent's office — other expenses	279.31	330.00	301.18	300.00
I-10	Compulsory education — salaries	358.68	350.00	350.00	350.00
I-11	Compulsory education — other expenses				
I-12	School census	155.85	170.00	140.00	170.00
I-13	Other expenses of general control	2,250.00	600.00	134.38	750.00
I-14	Total for General Control	\$13,081.85	\$12,600.00	\$12,108.94	\$13,020.00

The amount asked for General Control for the school year 1926-1927 is approximately the same as for the preceding fiscal year.

Other expenses of General Control include the following items:

Biennial audit of financial records	\$500
Legal services	\$250

B II INSTRUCTIONAL SERVICE		1924-1925 SPENT	1925-1926 BUDGET	1925-1926 SPENT	1926-1927 BUDGET
B II-1	Supervisors — salaries	\$ 5,767.40	\$ 7,250.00	\$ 7,375.00	\$ 8,600.00
II-2	Supervisors — other expenses				200.00
II-3	Principals' offices — salaries of principals	6,200.00	6,350.00	6,397.50	6,750.00
II-4	Principals' offices — salaries of clerks	1,913.50	2,150.00	2,143.26	2,450.00
II-5	Principals' offices — supplies	182.00	300.00	74.39	400.00
II-6	Principals' offices — other expenses		175.00	146.52	150.00
II-7	Other expenses of supervision				
II-8	Salaries of teachers	149,818.90	157,155.00	154,843.36	162,150.00
II-9	Textbooks (<i>under</i> B VI, Auxiliary Agencies)				
II-10	Other supplies used in instruction:	5,339.53	6,000.00	4,838.87	6,000.00
II-11	Other supplies used in instruction:				
a.	Manual training				
b.	Physical training				
c.	Art				
d.	Music				
e.	Agriculture				
f.	Domestic science and art				
g.	Physics				
h.	Chemistry				
i.	Biology				
j.	Kindergarten				
k.	Commerce				
l.	Science				
m.	Miscellaneous				

(Continued on page 116)

B II INSTRUCTIONAL SERVICE (Continued)		1924-1925 SPENT	1925-1926 BUDGET	1925-1926 SPENT	1926-1927 BUDGET
B II-12	Commencement exercises and exhibits	\$ 122.21			
II-13	Substitute teachers' salaries allocated to B II-9 for year 1926-1927	1,596.68	\$200.00	\$193.76	\$200.00
II-14	Other expenses of instruction (Includes transportation of agricul- ture teacher only)	301.19	300.00	309.42	300.00
II-15	Total for Instructional Service	\$171,241.41	\$179,880.00	\$176,322.08	\$187,200.00

For Instructional Service the amount budgeted for 1926-1927 is \$7320 greater than for 1925-1926.
Item B II-9, Salaries of Teachers, is allocated as follows:

Senior high school	\$58,375.00
Junior high school	43,775.00
Elementary schools	58,500.00
Substitute teachers	1,000.00
Emergency	500.00

The increase over the preceding fiscal period is apportioned as follows:

Additional art supervision	\$1750
Additional teachers	5900
Salary increases (net)	1720

Since the attendance increased 5.4% during the past school year, this increase of 4.1% in Instructional Service is proportionate.

Item B II-11, Other Supplies Used in Instruction, is based on an estimate of \$3.00 per child in average enrollment for the school system.

B III OPERATION OF PLANT		1924-1925 SPENT	1926-1926 BUDGET	1926-1926 SPENT	1926-1927 BUDGET
B III-1	Wages of janitors and other employees				
III-2	Fuel	\$16,242.44	\$16,300.00	\$16,024.23	\$16,700.00
III-3	Water	10,205.66	10,000.00	10,918.09	10,000.00
III-4	Light and power	737.42	750.00	830.83	750.00
III-5	Janitors' supplies	1,792.54	2,000.00	2,091.83	2,100.00
III-6	General care of grounds (Allocated to B IV-1 for year 1926-1927) . . .	1,814.73	2,000.00	1,377.82	1,500.00
III-7	Services other than personal	681.24	1,000.00	417.32	1,000.00
III-8	Telephones	677.47	700.00	657.00	700.00
III-9	Other expenses of operation				
III-10	Total for Operation of Plant	\$32,151.50	\$32,750.00	\$32,317.12	\$32,750.00

The appropriation for Operation of Plant remains approximately the same as for the preceding fiscal period. The improvement of one heating plant, together with the purchase of a better grade of coal which has been found more economical, will keep the expenditure for fuel well within the appropriation.

A few increases in janitors' salaries together with an increased appropriation for night service account for the increase in Item B III-1.

B IV MAINTENANCE OF PLANT		1924-1925 SPENT	1925-1926 BUDGET	1925-1926 SPENT	1926-1927 BUDGET
B IV-1	Upkeep of grounds and repair of buildings, repair and replacement of heating, lighting, and plumbing equipment	\$5,582.06	\$ 8,500.00	\$8,309.26	\$11,500.00
	Summer repairs				
	Emergency fund for year				
IV-2	Repair and replacement of apparatus, furniture, and other equipment	1,494.99	1,500.00	1,190.79	2,000.00
IV-3	Other expenses of maintenance				
IV-4	Total for Maintenance of Plant	\$7,077.05	\$10,000.00	\$9,500.05	\$13,500.00

The appropriation requested for Maintenance of Plant for 1926-1927 is \$3500 higher than the amount asked for 1925-1926. The rehabilitation of the heating plant in School D accounts for this increase. The remaining amount is allocated as follows:

Summer repairs	
Labor	\$2000
Materials	8000
Wage of maintenance staff during school year	1500
Emergency fund for use during school year	1500
	<u>\$8000</u>

B V FIXED CHARGES		1924-1925 SPENT	1925-1926 BUDGET	1925-1926 SPENT	1926-1927 BUDGET
B	V-1 Pensions	.	.	.	.
	V-2 Rents	.	.	.	.
	V-3 Insurance	.	.	.	.
	V-4 Taxes	.	.	.	.
	V-5 Total for Fixed Charges	.	.	.	.
		\$ 533.23			
		1,301.25	\$1,500.00	\$1,608.73	\$1,500.00
		171.28	250.00	361.26	500.00
		\$2,005.81	\$1,750.00	\$1,969.99	\$2,000.00

The slight increase in Fixed Charges is due to additional paving assessments which fall due during the fiscal year 1926-1927.

B VI AUXILIARY AGENCIES		1924-1925 SPENT	1925-1926 BUDGET	1925-1926 SPENT	1926-1927 BUDGET
B VI-1	Libraries — salaries (Librarians' included with high school teachers)				
VI-2	Libraries — books, repairs, and replacements	\$ 1,606.84	\$ 2,000.00	\$ 1,253.76	\$ 2,000.00
VI-3	Libraries — other expense				
VI-4	Health service — medical inspection	1,714.97	2,000.00	2,000.00	2,100.00
VI-5	Health service — nurse service	781.82	675.00	675.00	675.00
VI-6	Health service — dental service				
VI-7	Health service — other expenses, as supplies, nurse, and dentist	29.63	250.00	246.04	250.00
VI-8	Transportation of pupils				
VI-9	Ungraded rooms — salaries	4,244.26	2,950.00	2,633.10	2,950.00
VI-10	Ungraded rooms — supplies				
	(Under B II-11, Other Supplies Used in Instruction)				
VI-11	School lunches — salary of supervisor	318.76	1,000.00	750.00	800.00
VI-12	Recreation				
VI-13	Other expenses — care of high school suit rooms				
VI-14	Total for Auxiliary Agencies	\$8,696.28	\$8,875.00	\$7,857.90	\$9,000.00

The appropriation for Auxiliary Agencies for 1926-1927 remains the same as last year.

B VII CAPITAL OUTLAY		1924-1925 SPENT	1925-1926 BUDGET	1925-1926 SPENT	1926-1927 BUDGET
B VII-1	Land				\$ 5,000.00
VII-2	New buildings	\$72,822.86	\$3,500.00	\$3,166.62	95,000.00
VII-3	Improvement of new grounds				1,000.00
VII-4	Alteration of old buildings				3,000.00
VII-5	Equipment of new buildings — heating, lighting, plumbing, electrical		2,250.00	2,250.00	
VII-6	Equipment of new buildings — furniture				5,000.00
VII-7-8	Equipment of new buildings — installing apparatus		200.00	126.27	500.00
VII-9	Equipment of old buildings — heating, lighting, plumbing, electrical	565.50			500.00
VII-10-11-12-13	Equipment of old buildings — furniture and apparatus	3,213.93	1,600.00	548.70	2,000.00
VII-14	Other capital outlay				
VII-15	Total Capital Outlay	\$76,602.29	\$7,550.00	\$6,091.59	\$112,000.00

The Capital Outlay appropriation for 1926-1927 includes the expenditure of funds for the purchase and improvement of a site of five acres for Elementary School E, recently burned, and funds for the erection and equipment of the ten-unit elementary school building.

Items B VII-1, B VII-2, B VII-3, B VII-6, and B VII-7-8 carry these appropriations.

Item B VII-4 provides \$3000 for a movable partition in the senior high school gymnasium made imperative by the extension of the physical education program.

Item B VII, 10-13, of \$2000, is allocated as follows:

Typewriters	\$500
Typewriter tables	50
Maps	300
School piano	200
Electric clock	200
Emergency fund for year	750

B VIII DEBT SERVICE		1924-1925 SPENT	1925-1926 BUDGET	1925-1926 SPENT	1926-1927 BUDGET
B VIII-1	Payment of bonds	\$ 2,000.00	\$12,000.00	\$12,000.00	\$13,000.00
VIII-2	Sinking fund		4,500.00		5,500.00
VIII-3	Payment of interest on bonds . . .	39,121.18	33,000.00	32,782.00	31,000.00
VIII-4	Payment of interest on short-time loans	2,794.52	3,000.00	2,858.36	3,000.00
VIII-5	Total for Debt Service	\$43,915.70	\$52,500.00	\$47,640.36	\$52,500.00

The appropriation asked for Debt Service for 1926-1927 is the same as for 1925-1926. The interest obligations on funded debt are as follows:

DATE OF ISSUE	RATE	AMOUNT OUTSTANDING	INTEREST
July 1, 1908	4%	\$ 15,000.00	\$ 400.00
July 1, 1914	4½%	71,000.00	2,840.00
January 1, 1922	5%	193,000.00	9,650.00
July 1, 1922	4½%	284,000.00	12,780.00
July 1, 1924	4¾%	100,000.00	4,375.00
Total			<u>\$30,045.00</u>

Item VIII-4. Interest on short-time loans is necessary because of the anticipation of tax revenues which has been practiced for many years.

COMPARATIVE PERCENTAGES

FUNCTIONAL DIVISION		APPROPRIATION	PERCENTAGE OF TOTAL CURRENT EXPENSE	AVERAGE FOR COMPARABLE MID-WESTERN CITIES
General control	.	\$ 13,020.00	5.1	3.9
Instructional service	.	187,200.00	72.7	69.6
Operation of school plant	.	32,750.00	12.7	11.8
Maintenance of school plant	.	13,500.00	5.2	5.5
Fixed charges	.	2,000.00	.8	6.9
Auxiliary agencies	.	9,000.00	3.5	2.3
Total for Current Expense	.	\$257,470.00	100.	100.

It will be noted that the percentages devoted to General Control, Instructional Service, Operation, and Auxiliary Agencies in this budget are larger than the average for comparable Mid-Western cities, while the percentages devoted to Maintenance of School Plant and Fixed Charges are lower. The larger Instructional Service percentage indicates that a larger proportion of current expense is allocated to the instructional phase of the work of the school system, while the multiplicity of small school buildings explains in large measure the larger percentage set aside for Operation of School Plant.

In general, these percentages represent a very satisfactory division of the funds among the functions performed by the schools.

THE FINANCING PROGRAM

Following the classification of the United States Bureau of Education the revenues anticipated are secured from the sources indicated below :

REVENUES

1. State apportionment and appropriations	\$ 4,700.00
2. County appropriations	—
3. Appropriations from other civil divisions, including city treasury	—
4. Income from taxation for maintenance purposes (property, business, poll taxes, etc.), excluding debt obligations	226,520.00
5. Income from taxation for debt service	52,500.00
6. Income from other school districts for tuition	23,000.00
7. All other revenue receipts (fines, penalties, gifts, bequests, rents, interest, tuition fees from patrons only, etc.)	5,000.00
Total revenue receipts	<u>\$311,720.00</u>
8. Non-revenue receipts:	
(a) From loans and bond sales	\$100,000.00
(b) From sales of property and proceeds of insurance adjustments	10,000.00
(c) Other non-revenue receipts	—
9. Balance on hand from previous school year	5,250.00
Total amount available for use during the year	<u>\$426,970.00</u>

Since the revenues are legally raised by funds, the fund allocation is as follows :

General fund	\$264,470.00
Interest and sinking fund	52,500.00
Special building fund	110,000.00
	<u>\$426,970.00</u>

Under the statutes of this state the board may levy not to exceed 24 mills, divided as follows :

1. General fund Up to 16 mills
2. Interest and sinking fund No limit specified
3. All funds Up to 20 mills

The following detailed statements will show levies necessary:

GENERAL FUND

RECEIPTS		DISBURSEMENTS	
Balance on hand . . .	\$ 3,000.00	1926-1927 budget	\$264,470.00
State and Federal aid .	1,700.00	Surplus over	
Tuition	23,000.00	budget require-	
State school fund . .	3,000.00	ments	8,455.00
Tax on money and			
credits	900.00		
Mortgage tax . . .	3,000.00		
Miscellaneous . . .	5,000.00		
Collection on 12.75			
mill levy for General			
Fund, using approxi-			
mate valuation for			
District No. 60 of			
\$18,300,000.00 . .	233,325.00		
Totals	\$272,925.00		\$272,925.00

SPECIAL BUILDING FUND

Insurance	\$ 10,000	1926-1927 budget . . .	\$110,000
Bonds to be sold . . .	100,000		
Totals	\$110,000		\$110,000

INTEREST AND SINKING FUND

Balance on hand . . .	\$ 2,500.00	1926-1927 budget . .	\$52,500.00
Collections on 2.80		Surplus over budget	
mill levy on ap-		requirements . . .	1,425.00
proximate valuation			
of \$18,300,000.00			
for District No. 60	51,425.00		
Totals	\$53,925.00		\$53,925.00

RECAPITULATION OF LEVIES

LEVY FOR 1925-1926	LEVY FOR 1926-1927
General fund . . . 13.33 mills	General fund . . . 12.75 mills
Interest and sinking fund 2.88 mills	Interest and sinking fund 2.80 mills
Schoolhouse and repair fund60 mill	Schoolhouse and repair fund ———
Totals 16.81 mills	Totals 15.55 mills

COMMENT

This budget is constructed on a functional basis; it has an educational program and a financing program as well as a spending program; and it shows the expenditures of the preceding fiscal year together with the budget appropriations for that year in addition to the proposed items for the ensuing fiscal year. It thus makes possible comparisons that the first type presented does not. It follows very closely the schedule of the most frequently used stock-accounting books, so that both the state and the national reports can be easily compiled.

The expenditures for 1925-1926 are based on an audit of the city's school expenditures by a firm of certified public accountants. The difference between the appropriation and the expenditures in each case, therefore, represents exactly what happened in this particular city. It shows how rarely the appropriations and the expenditures balance exactly in actual practice. Where appropriations are exceeded, of course, transfers are made *prior* to incurring the obligation.

In general, this type of budget represents one that can be easily defended before boards of education and city and county governing bodies. At the same time, it is also a working budget from which the various controlling accounts can be set up.

CONCLUSION

Budget making constitutes one of the most important functions of the school executive. The proper formulation of the educational program involves not alone a consideration of the past and present educational activities, but a look ahead to determine what provisions should be made for the future. Its preparation involves the careful thought and coöperation of many different members of the staff. Once set up, it controls the entire range of educational activities. Its successful administration involves the hearty coöperation of many members of the staff.

Selected References

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Stresses the necessity of an adequate financial plan for the efficient handling of funds in the formulation of which the superintendent should play the leading rôle.

BUCK, ARTHUR E. *Budget Making*. D. Appleton & Co., New York; 1921.
A general treatise on the principles of budget making.

CASTLE, L. E. "Practical Consolidated-School Budgeting," *American School Board Journal*: Vol. 63, No. 6, page 39 (December, 1921).

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— "Measuring the Budgetary Procedure of a School System," *American School Board Journal*: Vol. 68, No. 6, page 37 (June, 1924).

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—— "A Standardized Budget," *American School Board Journal*: Vol. 61, No. 4, page 33 (October, 1920).

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RAINEY, HOMER P. *Public School Finance*. The Century Company, Boston; 1929.

Chapter II is a general discussion of the problem of fiscal control in school districts. Chapter VI discusses in considerable detail budgetary procedure and responsibility for preparation of the budget.

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Chapter V treats of securing revenue.

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TWENTE, JOHN W. *Budgetary Procedure for a Local School System*. The Author, University of Kansas, Lawrence, Kansas; 1923.

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Advocates teachers' lists for budget making and spending to reduce expenditures.

CHAPTER SIX

PUBLIC SCHOOL ACCOUNTING

STOCKHOLDERS in corporations, partners in business, and owners of commercial enterprises are vitally concerned with the returns made on their investments. To determine these they find it imperative to keep more or less detailed and accurate records of their income and expenses. Such records often involve extremely intricate and detailed analyses of the cost of producing or selling a commodity. They give facts relative to costs and profits, and form the basis on which business policies are adopted, modified, or rejected.

It is imperative that school administrators keep similar accurate records of income and expenses. The computation of educational profits has not yet been reduced to the exact quantitative basis of the manufacturer, nor is it possible to measure them in terms wholly comparable with the means used in industry. The tax-paying public, however, is vitally concerned with the proper spending of public funds, and their proper accounting and reporting are factors in securing adequate support. Furthermore, every educational problem the school administrator faces has its financial aspect. It is therefore necessary that school systems have accurate and adequate financial records.

There are six functions that any school accounting system should perform, whether it be for a one-room district school or for the school system of a city of half a million. These functions are as follows:

1. Giving a record of funds received — both revenue and non-revenue — allocated by sources;
2. Recording expenditures — by funds where required by law, by functions, by administrative units, and by instructional divisions;

3. Giving a complete record of every financial transaction, including the original documents;
4. Controlling budget appropriations;
5. Giving data for the computation of unit costs;
6. Presenting financial facts for complete and accurate financial reports.

RECORDING INCOME

To perform the first of these functions, an accounting system for schools must record the income items carefully and classify them as to source, dividing them into revenue and non-revenue. It is desirable to know the amounts received from Federal, state, and county appropriations; from district taxation; from other school districts; from individuals; and from other miscellaneous sources. These constitute the so-called "revenue receipts"; i.e., "those that increase assets or decrease reserves without increasing reserves or liabilities." Non-revenue receipts must be carefully differentiated from these. Examples of non-revenue receipts are proceeds from loans, bond sales, the sale of lands, the operation of school cafeterias, and the sale of textbooks and supplies. With these various classes and sources clearly differentiated the administration has definite knowledge of the receipts and their sources.

It is not out of place to note here that *income* and *receipts* may be synonymous, but the receipts actually collected frequently fall short of the income anticipated. This is likely to be true in times of depression when there is considerable mobility of elements of the population who may possess personal property that is subject to taxation but that is moved between the time of assessment and the tax-collecting period.

The financing program, page 124, shows the classification of receipts suggested by the United States Bureau of Education in its report form. Small systems may use an abbreviated form,

while others are required to segregate by funds; e.g., "general fund," "school building and maintenance fund," and "interest and sinking fund." In the latter case the income should be classified not only in accordance with the schedule suggested by the United States Bureau of Education, but also by funds, so that both the Federal and the state reports can be compiled from time to time. In fact, where fund accounting prevails, the laws usually specify that both receipts and expenses must be allocated by funds, that transfers from one fund to another cannot be made except through an elaborate procedure, and that all reports must be so compiled that they show fund balances.

RECORDING EXPENSES

The second function of the school accounting system involves the proper classification of all items of expense. Where fund accounting is required by law, an accounting of all items of expense by funds is essential. In any event a functional classification with a designation of objects is highly desirable. A division into instructional divisions — the secondary schools, kindergartens, elementary schools, vocational schools, night schools, and others operated by the city — is very convenient. Another division by organization units — buildings, for example — is of service on occasion.

Classification of expenses. In 1912 a joint committee consisting of representatives from the Department of Superintendence of the National Education Association, from the Federal Bureau of Education, from the Census Bureau, and from the National Association of School Accounting Officers drafted and published a set of standard forms for the recording and reporting of educational statistics.¹ The schedule of accounts prepared by this committee was presented in two

¹ *Report of the Committee on Uniform Records and Reports* (Bulletin 1912, No. 3, of the United States Bureau of Education).

forms: One, complete, was designed for the larger cities; and the other, abridged, was adapted to the smaller cities. This classification, or some modification of it, is the basis of all modern school accounting systems. Expenses are now classified under three general headings: (1) Current Expense, (2) Debt Service, (3) Capital Outlay.

Current Expense includes all payments for the instruction of those attending school and all proprietary and regulatory expense incident thereto.

Debt Service includes all interest on school indebtedness and all payments which reduce that indebtedness.

Capital Outlay covers all expenditures which result in an increase in the total value of school property.

Current Expense is further subdivided into the functional classifications of General Control, Instructional Service, Operation of School Plant, Maintenance of School Plant, Fixed Charges, and Auxiliary Agencies.

General Control is used to designate those activities which deal with the regulation, direction, and control of school affairs.

Instructional Service includes all items of expense concerned directly with actual teaching or aiding in the teaching of those attending school, those concerned with improving the quality of teaching, and with supplies used in the teaching processes.

Operation of the School Plant includes all expenses involved in keeping the school building open and ready for use.

Maintenance of the School Plant includes all expenses for the restoration of any piece of property to its original condition of completeness or efficiency.

Fixed Charges includes a group of regularly recurring expenditures, such as rents, insurance, and taxes, which consume a portion of the school funds.

Auxiliary Agencies includes all work carried on by the school system under the auspices of the board of education

other than regular instruction and the regulative and proprietary service incident to such instructional service.

Another classification, *Coördinate Activities*, is frequently included. This embraces the attendance, health, and social service and includes activities that are coördinate with instruction but not a part of it.

Detailed schedule of expense accounts. Practically every modern system of school accounting follows in more or less detail the schedule of accounts recommended by the Committee on Uniform Records and Reports. The following schedule taken from Case's *Handbook of Instructions for Recording Disbursements for School Purposes* is probably the best known and the most widely used.¹

EXPENSES OF GENERAL CONTROL — OVERHEAD CHARGES

[See Form 3, Appendix]

Business administration :

1. School elections
2. Board of education and secretary's office
3. Finance offices and accounts
4. Offices in charge of buildings and supplies
5. Legal services
6. Operation and maintenance of office buildings
7. Other expenses of business control

Educational administration :

8. Office of superintendent of schools
9. Enforcement of compulsory education, truancy, and census enumeration
10. Other expenses of educational control

EXPENSES OF INSTRUCTION — DAY SCHOOLS

[See Form 4, Appendix]

Supervision :

11. Salaries of supervisors of grades and subjects
12. Other expenses of supervisors

¹ Hiram C. Case, *Handbook of Instructions for Recording Disbursements for School Purposes*, pages 4-7. (C. F. Williams and Son, Inc., Albany, New York; 1916.)

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13. Salaries of principals
14. Salaries of principals' clerks and office assistants
15. Other expenses of principals' offices
16. Other expenses of supervision

Teaching :

17. Salaries of teachers
18. Textbooks
19. Other supplies used in instruction
20. Other expenses of instruction

EXPENSES OF INSTRUCTION — NIGHT SCHOOLS

Supervision :

21. Salaries of supervisors of grades and subjects
22. Other expenses of supervisors
23. Salaries of principals
24. Salaries of principals' clerks and office assistants
25. Other expenses of principals' offices
26. Other expenses of supervision

Teaching :

27. Salaries of teachers
28. Textbooks
29. Other supplies used in instruction
30. Other expenses of instruction

EXPENSES OF OPERATION OF SCHOOL PLANT

31. Wages of janitors and other employees
32. Fuel
33. Water
34. Light and power
35. Janitors' supplies
36. Other expenses of operation of school plant

EXPENSES OF MAINTENANCE OF SCHOOL PLANT

37. Repair of buildings and upkeep of grounds
38. Repair and replacement of equipment
39. Other expenses of maintenance of school plant

EXPENSES OF AUXILIARY AGENCIES AND SUNDRY ACTIVITIES

40. Libraries
41. Books
42. Promotion of health

- 43. Transportation of pupils
- 44. Care of children in institutions
- 45. Provision of lunches
- 46. Community lectures
- 47. Social centers
- 48. Recreation
- 49. Other auxiliary agencies and sundry activities
- 50. Payments to private schools
- 51. Payments to schools of other civil divisions

EXPENSES OF FIXED CHARGES

- 52. Pensions
- 53. Rent
- 54. Insurance
- 55. Taxes
- 56. Contributions and contingencies

EXPENSES OF DEBT SERVICE

- 57. Redemption of bonds
- 58. Payments to sinking fund
- 59. Redemption of short-term loans
- 60. Payments of interest on bonds
- 61. Payment of interest on short-term loans
- 62. Refunds (tax and tuition)

EXPENDITURES IN CAPITAL OUTLAY

(Acquisition and Construction)

- 63. Land
- 64. New buildings
- 65. Alteration of old buildings
- 66. Equipment of new buildings and grounds
- 67. Equipment of old buildings and grounds exclusive of replacements

Other classifications of expense. A further classification of expense by individual buildings is frequently desired. Such a classification is easily secured by allocating each item of expense in the schedule just given to the building for which it was incurred. A classification by instructional divisions — that is, by high schools, junior high schools, elementary

schools, and so on — can also be secured by a further allocation of these items. A subject division — for example, English, social science, and the like — is possible through procedure similar to that outlined above.

RECORDING COMPLETELY EVERY FINANCIAL TRANSACTION

The third function implies the keeping of a complete history of every financial transaction. For this purpose the system provides for a systematic filing of the requisition, purchase order, invoice, voucher, canceled warrant or check, and any other document involved in any transaction. The pay roll in its entirety becomes a part of the permanent record. Any interested party may then have access to all the records, and any litigation involving financial transactions has adequate support from the school board records.

Explanation of terms involved. To understand thoroughly the implication of the third function of school accounting it is necessary that certain fundamental accounting terms be understood. School funds may be expended either for goods or for services. To make clear the usual procedure involved in the former let us suppose that a manual-training instructor wishes a package of sandpaper. He will issue a *requisition* (see Form 9, Appendix) on the executive officer of the board who is authorized to supervise purchasing.

The requisition is a request made by an employee for the procuring of goods or service. If complete, it should include the following data: kind of material desired, exact quantity stated in the units in which the material is measured, date delivery is desired, purpose for which material is to be used, name of requisitioner, point of delivery, name of the vender if a particular brand is desired. If the requisition is approved, then the proper executive officer of the board authorizes the issue of a *purchase order* (see Form 10, Appendix) on a vender whose duty it is to supply the goods wanted.

The purchase order is merely a request in writing to deliver certain specified goods on a given date, at a point named in the document, for certain considerations. If properly made out, a purchase order should include the following data: serial number, date of issue, name and address of vender, quantity and description of article desired, date of delivery required, shipping instructions, prices, terms of payment.

When the vender ships the goods, he will file his invoice covering the goods on a *voucher* (see Form 1, Appendix, page 381) which certifies the correctness of the claim usually supported by affidavit.

A voucher may be defined, from an accounting point of view, as "any paper or document which authoritatively supports an entry in any book of original entry."¹ It should contain, if properly made out, the name of vendee, date of shipment, description of goods delivered, quantity, unit price, total price, discount, and supporting affidavit. It will also include a serial number, data for checking receipt of goods, approval of payment, accounting directions — that is, the accounts to be charged — and number and amount of warrant or check used in payment of the claim.

The voucher varies in form. It may be merely a "jacket" or "folder" on which are few data aside from the accounting classification and simple memoranda recording the transaction in a general way only, or it may be a combination invoice-voucher such as Form 1 in the Appendix. In some school systems the function of a voucher is served by stamping with a rubber stamp the desired data on the vender's invoice or other type of claim.

The voucher may also serve the purpose of a journal since that book has practically disappeared from school accounting

¹ John A. Powelson, *Introductory Accounting*, page 536. (Prentice-Hall, Inc., New York; 1926.)

systems. Pay rolls, supplies, imprest funds, and other transactions not involving expenditure of funds are also handled through this medium. In the event that the supporting data are not included in the voucher, or attached to it, notations should be made indicating where the supporting data may be found.

After the claim has been approved, a *warrant* (see Form 11, Appendix) or check will be issued in payment thereof. This is merely a duly executed order on the custodian of funds directing the payment of a specified amount of money to satisfy a given claim. This warrant sometimes takes the form of a voucher check, or voucher warrant, so constructed that one side will serve as a voucher giving a complete record of the transaction while the reverse side is the ordinary check or warrant with spaces for endorsements. When folded, the inside contains the voucher form while the outside is similar to the ordinary check or warrant.

Practice in cities. An adequate accounting system will provide for all these documents or their equivalents and will insure their proper filing so that they become part of the permanent records of the board of education. The voucher systems used in twenty-three Eastern cities visited by the writer are shown in Table 18. The consecutive method of filing was preferred by

TABLE 18
VOUCHER SYSTEMS USED IN TWENTY-THREE CITIES

Vouchers filed consecutively	20
Vouchers filed alphabetically	3
Filed voucher contains:	
(a) Vender's invoice	23
(b) Copy of purchase order	10
(c) Copy of requisition on which purchase order is based	4
Purchase order provides for "accounting at the source"	14
Voucher check or warrant used	1

twenty of the twenty-three cities. Fourteen of the twenty-three provided for accounting at the source; that is, for indicating on the purchase order the account or accounts to be charged when the purchase is made. How nearly the recording of the complete history of a transaction is realized in practice is seen when it is noted that only three out of the twenty-three cities file the vender's invoice, the purchase order, and the requisition with the voucher.

Fundamental books of account. The realization of the third function of a school accounting system implies not only the proper handling of the original records but also the systematic classification of these expense items under their proper headings and their posting to the proper accounts so that an accurate accounting may be made of the use of funds. An examination of accounting systems actually used by cities will throw some light on current practice.

During 1925 the writer visited twenty-five New York and New Jersey cities, ranging in size from thirty thousand to approximately three hundred thousand. The books and forms which he found in these cities are as follows: ¹

TABLE 19
ACCOUNTING BOOKS AND FORMS USED IN TWENTY-FIVE CITIES

NAME OF BOOK OR FORM USED	NUMBER OF CITIES
General ledger	12
Subsidiary expense-distribution ledger	25
Voucher register	25
Cashbook	13
Insurance register	22
Subsidiary pay-roll ledger	10
Subsidiary budget or appropriation ledger	1
Subsidiary plant or property ledger	3
Accounts payable register	5
Petty-cash book for imprest funds	15

¹ These data were taken from Chapter II of the author's monograph, *The Business Administration of a City School System*.

It will be noted that every city made use of two books — a subsidiary ledger showing functional distribution of expenses and a voucher register. Approximately 50 per cent used a general ledger and a cashbook. Other books appearing in a number of the cities are the insurance register, the subsidiary pay-roll ledger, and the petty-cash book for the imprest fund.

From these practices, which show wide variation, and from the general principles of accountancy, it is safe to infer that the following books of account are essential to a system which would fulfill the third function of an accounting system — namely, the establishing of a complete record of every financial transaction :

1. A voucher register (see Form 2, Appendix) in which are recorded the vouchers together with number, date of each, claimant, number and description of warrant used in payment, fund drawn upon, and general account charged.

2. An expense-distribution ledger carrying the operating accounts of the system (see Forms 3 and 4 in the Appendix), those accounts corresponding with the schedule of accounts adopted for use. Through this ledger certain budget controls may be secured.

3. A cashbook for the recording of all receipts and disbursements.

4. A general ledger (see Form 8, Appendix) which will carry the controlling accounts of the system, including the appropriation accounts. Although this book is utilized by only half the cities, its use is absolutely essential to the complete functioning of an accounting system, and to the determining of financial facts necessary for the formulation of administrative policies.

These books constitute the irreducible minimum for a system approaching adequacy. Other desirable books are the following :

1. Petty-cash book for imprest fund, used to record numerous small cash transactions — such as express, postage, and messenger service — occurring in any office but too small to justify the preparation of voucher warrants.

2. Insurance register (see Form 23, Appendix) on which are recorded data concerning insurance policies.

3. Plant or property ledger, in which are carried the capital-investments accounts. If the proper records of depreciation and plant value are to be made, this book is imperative.

4. Journal (see Form 7, Appendix) for the entering of such transactions as would not come through the regular vouchers. (This is being superseded by a special form of voucher.)

5. Accounts-payable register for the recording of unpaid invoices.

6. Pay-roll ledger (see Form 13, Appendix) containing accounts with the members of the staff.

7. Accounts-receivable register containing the accounts which are owing to the school district.

CONTROLLING BUDGET APPROPRIATIONS

The fourth function is the maintaining of proper budget controls. A properly constructed budget implies the establishment of a limit on the expenditures for any given service or set of objects. An adequate check on the limitations must be available at all times for those authorizing purchases. These checks are secured through the operation of an adequate accounting system.

An elaborate discussion of budgetary procedure in the preceding chapter makes detailed explanations unnecessary here. It is not out of place, however, to call attention again to the means used by a selected group of cities to secure adequate budget controls. Among these cities, three had apparently no systematic method of checking on budget appropriations, and three cities checked by two methods. It is thus seen that

some method of securing control in an accounting system is followed by practically all those cities, but that no uniformity prevails.

UNIT COSTS

The fifth function of an accounting system involves the computation of unit costs. To act intelligently in the formulation of new policies or in the modification of existing ones administrators must know costs within their respective systems and comparative costs among other school systems. But for valid comparisons these systems must be really comparable with respect to wealth per capita, size, composition of population, and educational service rendered. For this purpose school tax rates and total expenditures are inadequate. The computations must be made on the basis of identical units involved in similar functions. Such data an adequate accounting system must provide.

In computing the total cost of a given function or division of instruction it is necessary to take into consideration not only the direct cost but all other costs as well that affect the total in any manner. The latter are known as indirect costs. Thus administration is an indirect cost, affecting instruction, operation, maintenance, attendance service, and many other activities.

Hutchinson gives so admirable an explanation of the term *unit costs* that his statement is reproduced here:¹

The term *unit costs* for public education is used to mean the total cost of public education, as well as the cost of any part of it, divided by the total units of any one kind that determine the total cost of education, or any part of it. Thus, some of the kinds of units that determine such costs are schools, schoolrooms, subjects taught, pupils taught, districts, and city wards. . . .

The word *standard* contains the idea of authority based on numbers. Standard units are units that have authority because of the

¹ J. Howard Hutchinson, *School Costs and School Accounting*, pages 10-11. (Teachers College, Columbia University, New York; 1914. Used by permission.)

frequency of their occurrence. Unit costs of public education would be standard when such unit costs were practically identical for many cities.

Hutchinson's admirable analysis has this to say concerning the function of unit costs:¹

The purpose then in determining standard unit costs of public education is to provide the school administrator with certain tests, which, with other tests, especially of the pupils' abilities, will enable him to determine the efficiency of his own school system by comparing the costs . . . in his own school system with the costs in many school systems.

To be worth while the study must reveal the standard unit costs, not only of the one great service, public education, but also of the many distinct services that make up public education. That is, to be worth while this study must determine not only the standard total cost for public education, that is, for all schools, but also the standard unit costs for each kind of public education, that is, for all elementary schools, for all high schools. Nor is this sufficient. For all schools and for each kind of school there should be determined the standard unit costs for each character of service rendered, such as administration, operation, etc. And, finally, to be complete there must be determined for all schools, for each kind of school, and for each character of expenditure for each kind of school, the standard unit costs of each object of expenditure, as of personal service, of supplies, etc.

It is on the basis of such unit costs that administrative policies can be determined. Should some unit costs be lower than standard, the administrator may well ask himself whether the service rendered is adequate. On the other hand, should some be extraordinarily high, there is in that fact a challenge for close scrutiny of procedures and results. It must be admitted frankly, however, that owing to the complex character of the processes involved in carrying on the educational program standardization has not proceeded so far in this field as it has in the industrial field. Much work remains to be done before really comparable data are available.

¹ *Op. cit.*, pages 10-11.

The simpler and more commonly used unit costs are computed on average daily attendance, average membership, or total enrollment. They include costs for current expense for the school system as a whole, costs by divisions of instruction — high school and elementary schools — costs by individual buildings, and costs by functions — general control, operation, instructional service, and so on. The more refined costs may be computed in terms of cost per thousand student clock hours, or per student credit hours, or in plant operation on the basis of square foot of floor area. Again, they may be computed on an accrued economic basis, which is explained in a subsequent section, as well as on a cash disbursement basis.

Table 20 is given here to show the various items on which unit costs have been computed, together with the units of computation used. An attempt is made to indicate the more desirable ones.

FINANCIAL REPORTING

Finally, an adequate school accounting system must furnish the data for complete financial reports. In fact, the reports that are desired will determine very largely the accounting system to be used. These include reports made by the administrative staff to the board of education, reports made to the state department of public instruction, and reports to the United States Bureau of Education. There is also the published report and balance sheet issued periodically to the community by the board of education office. A discussion of the content of these various reports is reserved for more extended consideration elsewhere.

DETERMINING THE ACCOUNTING SYSTEM TO BE USED

Three methods may be used to determine the accounting forms and practices to be adopted. Accounting procedures may be studied as they function in city school systems; representative accounting systems may be examined in detail; or

TABLE 20

UNIT COSTS UTILIZED IN CITY SCHOOL ADMINISTRATION

ITEM	UNIT OF COMPUTATION ¹								
	Total Enrollment	Average Membership	Average Daily Attendance	Teacher	Clock Hour	Square Feet of Floor Space	Cubic Foot	Class-room	Credit Hour
Total current expense	X	X	X	X					
Administration cost	X	X	X						
Instructional cost	X	X	X						
Supervision cost	X	X	X						
Attendance service cost	X	X	X						
Health service cost	X	X	X						
Operation cost	X	X	X				X	X	
Maintenance cost	X	X	X				X	X	X
Instructional supplies	X	X	X				X		X
Janitorial supplies	X	X	X				X		X
Maintenance supplies	X	X	X			X		X	
Building cost	X	X	X				X		
Instructional division cost	X	X	X						
Subject cost	X	X	X						
	</								

¹ Small x shows the costs less frequently used or less satisfactory; capital X shows the costs more frequently used or most satisfactory.

the work of expert school accountants may be investigated. Undoubtedly a combination of these three plans will illuminate the problem from the standpoint of the superintendent of the schools. All three plans will be followed here.

The tables in this chapter indicate in a general way the practices and forms used in school accounting systems in twenty-five cities. Practice was found to vary from an extremely simple system including scarcely more than a voucher register and an expense-distribution record to a system hardly less elaborate than the complicated ones used by industrial plants. To attempt, on the basis of present practice, to say what should be used is well-nigh impossible.

Table 19 indicates that no uniformity prevails except in the keeping of the subsidiary ledger containing a functional distribution of expenditures. In fifteen of the cities studied expenditures were further allocated on a building basis. The existence in all the systems of one book — the expense-distribution record — may be due to the fact that the state departments of both New York and New Jersey require the keeping of such a record.

Hutchinson's plan. Hutchinson, after making a detailed study of accounting in several cities, submitted a plan for a school accounting system. He set up three purposes of such a system and provided record forms for each.¹ These purposes are as follow :

Purpose 1. "To provide for every transaction an original document that will contain a complete history of the transaction from its beginning to its completion."

Records for realizing Purpose 1 :

- (1) A supply requisition form
- (2) A work requisition form
- (3) A purchase order form

¹ *Op. cit.*, pages 98-100.

(4) A voucher form

(5) A pay-roll form

Purpose 2. "To make it possible for those in authority to account for funds appropriated for school purposes."

Records for realizing Purpose 2 :

(1) Expense ledger sheets for each grade, for each subject, for each school, and for general administration

(2) Appropriation ledger sheets and general balance sheets

Purpose 3. "To furnish administrative officers such information as will enable them to decide whether every service is performed at the lowest cost compatible with maximum efficiency."

Records for realizing Purpose 3 :

(1) Forms for monthly statements of total expenditures, of distribution of expenditures on various bases, of unit costs for each grade, each school, and general administration

(2) Time record sheets for members of the staff

Hutchinson's system is one designed frankly to show unit costs in great detail. It fails to classify income adequately and it gives no attention to the capital-investment accounts, nor to asset and liability accounts.

Peel's Simplified School Accounting. A. J. Peel has more recently outlined an elaborate and well-balanced system of school accounts. His "chart of accounts,"¹ reproduced here, shows his entire set-up of ledger accounts in graphic form.

He classifies the accounts into five divisions: balance-sheet accounts, appropriation accounts, revenue accounts, operating accounts, and fixed charges. The balance-sheet accounts include the asset and liability accounts — capital-investment accounts, cash, bills payable, bonds, and other liabilities.

¹ Arthur J. Peel, *Simplified School Accounting*, page 22. (Bruce Publishing Company, Milwaukee, Wisconsin; 1925.)

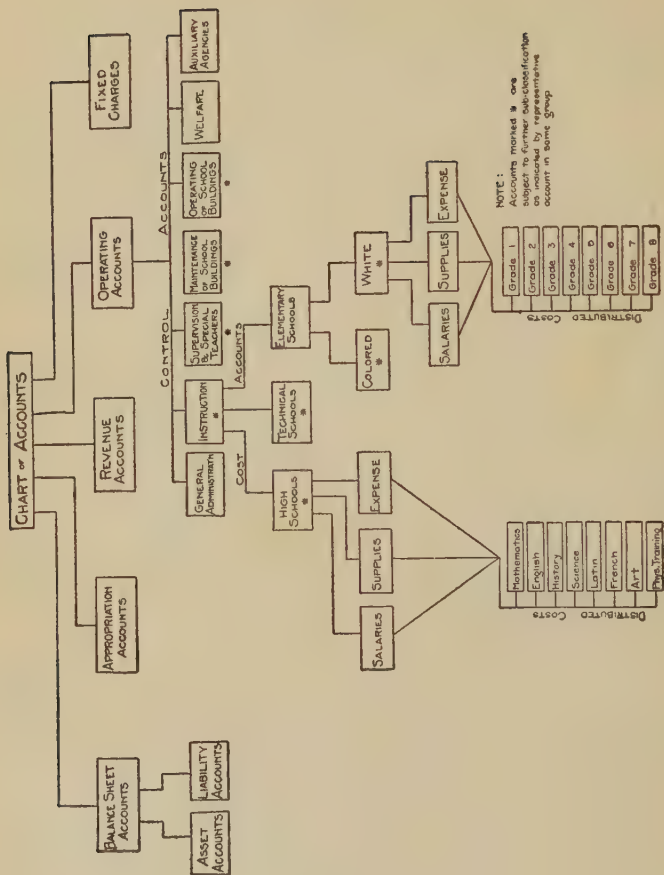


FIG. 13. Peel's Chart of Accounts.

The appropriation accounts are primarily those controlling budget appropriations. The revenue accounts give the income received, classified by sources. The operating accounts include a character classification of current expenses, which may be further classified into organization units, instruction divisions, and separate grades, if desired. The fixed-charges accounts include rent, insurance, and interest on bonded indebtedness.

In order to have the necessary original documents Peel suggests the following forms: purchase order, receipt for showing that goods purchased are delivered, voucher showing distribution of expenditures, voucher register, cash register, cost sheets, financial statement, and balance sheet.

The system proposed by Peel is thoroughly adequate from an accountancy point of view. It provides for all the records necessary to realize each of the functions set up at the outset. It is questionable, however, whether the ordinary school office has the facilities for keeping so elaborate a set of accounts. The setting up of the capital-investment accounts and the charging off of depreciation imply a type of plant valuation seldom found in even the best city school systems.

Engelhardt and Von Borghersrode's *Accounting Procedure for Public School Systems*. These writers have developed a set of principles and accounting forms based on the general proposition that school accounting exists primarily for rendering a real service in the formulation and appraisal of policies in public school administration. Their plan is sound from an accountancy point of view, economical in operation, and simple enough so that it can be handled in an office with little clerical help.

The system is reduced to simple forms which can be filed in standard files or in a relatively small binder fourteen inches by seventeen inches in size — convenient forms for any office.

The system provides for a thoroughly adequate voucher

system, complete in every detail, together with the following accounting records : general ledger, voucher register, expense distribution ledger, cashbook, stores and textbook ledgers, insurance register, and treasurer's receipts register.

It follows the standard classification of receipts and expenditures so that it can be used in widely separated parts of the country. The definitions given are, moreover, superior to other attempts. It thus furthers the cause of uniformity.

Simple but adequate forms are outlined for vouchers, voucher warrants, requisitions, bid forms, purchase orders, work orders, job cost sheets, pay-roll forms, inventory forms, and stock and textbook record forms.

The authors provide far more than a treatise on accounting. They suggest good business practices in connection with those activities involving directly the spending of money. Among these activities are purchasing, handling supplies and textbooks, supervising internal accounts, accounting for property, preparing financial statements, and making balance sheets. Provision is made for the simple computation of such unit costs as may be desired without considering that activity the primary function of the accounting system.

TYPICAL SCHOOL ACCOUNTING SYSTEMS IN USE

The *Simplified School Accounting System*. The *Simplified School Accounting System*, prepared by a group of graduate students under the direction of the writer, is used extensively in the Southwest.¹ It consists of an expenditures book, a clerk's record of receipts, a treasurer's record, and a voucher containing a classification of accounts for a distribution of the items included. The forms for the first three listed above fit into a binder 13½ by 22 inches in size. The system provides for the use of stock forms for the general ledger.

¹J. E. Stonecipher and others, *Simplified School Accounting System*. (McCormick Mathers Company, Wichita, Kansas; 1924.)

The expenditures book lists the vouchers together with the numbers of the school warrants issued in payment for them, and distributes the amounts on both a fund and a functional basis. The functional divisions have spaces for thirty-nine different accounts. Then there follows a distribution by administrative units with six different accounts. Control over the budget appropriation is secured by entering the appropriation for each item at the top of the column provided for a given account.

The plan thus enables one to keep an account with each building or instructional division and so compute the three types of unit costs. A voucher blank is provided whose face may be used as a vender's invoice and its reverse side for listing the accounts of the expense distribution records so that the amounts can be posted directly to that record. It can also be used as a folder to hold any other records of the transaction. The "clerk's record of receipts" provides a record of receipts by the various sources. The system makes no attempt to set up asset and liability accounts. It is concerned only with the operating accounts. But it does show income and expenditures, provides budgetary control, permits the computation of unit costs, and provides a complete history of each transaction. Through the general ledger and journal vouchers its use can be extended. This system, because of its simplicity, is adapted to the smaller districts where little help is available for accounting work.

The New Jersey system of accounting. This system was worked out to meet the needs of the larger cities of the state of New Jersey. It is fundamentally different from the majority of the systems in use in that it is set up on an accrual basis; that is, each obligation is charged against the budget appropriation and entered on the books when it is *incurred* rather than when it is *paid*. For example, an order for fuel is charged against the fuel appropriation when the purchase

order is issued, and entered on the books at the same time. It is thus possible to secure at any time an exact statement of the condition of all appropriations. In contrast with this plan the alternate one of charging items only when they are paid necessitates estimating the unpaid bills. The plan also records income as it accrues rather than as it is actually received in cash.

Accrual accounting is superior to a non-accrual system in that it provides an absolutely adequate check on budget appropriations. Another advantage of accrual accounting is that under such a system the expenses incurred in a given period are charged against that period; whereas if they are charged only when paid, the items actually expended during one fiscal period may be charged during another fiscal period. School districts have been known to defer the payment of a year's fuel bill, for example, until after the close of the fiscal year. Since the item was charged only when paid, one annual account showed no expenditures for fuel, whereas the next one showed a disproportionate amount spent for that item. Such a situation is impossible where the accounting system operates on an accrual basis. In the handling of income it is less satisfactory.

The New Jersey system embraces the following forms:

1. Budget Forms which contain all the items for which expenditure is to be made, listed by types of schools, together with data from previous fiscal periods to enable comparisons to be made.
2. Fund-Accounting Forms which provide for the accurate accounting of all funds required by the New Jersey law.
3. Appropriations and Receipt Forms which provide spaces for recording appropriations from resources, their distribution to the proper funds, and the recording of cash receipts.
4. Cash and Contractual Order Forms which provide

spaces for the entering of any item of expense against the proper account at the time it is incurred. The appropriation for each account is clearly indicated at the column heading so that no overdrawing is possible if care is used in checking when the entry is made. A functional subdivision is made, which corresponds exactly with the items on the state report and rather closely with the United States Bureau of Education schedule for the larger cities.

5. Secretary's Monthly Recapitulation which summarizes briefly for the month the condition of the funds.

6. Stock Supplies Form for use in districts using central stockrooms so that charges can be allocated to the proper sources.

The system is accompanied by detailed directions, voucher forms, and purchase order forms, making it complete.

The system is adequate from the standpoint of accounting for funds, controlling appropriations, and computing costs. It makes no attempt to handle asset and liability accounts.

WHAT ACCOUNTING SYSTEM SHOULD BE USED?

No attempt will be made here to decide specifically on the type of accounting system to be used. This must be determined by several factors. The amount of clerical help available is a limitation. The training of this clerical staff in accountancy is a second real limitation. The degree of refinement desired in the allocation of expenditures and in the computation of unit costs is a third limitation. A system requiring the handling of several hundred operating accounts is necessarily prohibitive for some districts. The handling of accounts on an accrual basis requires, for obvious reasons, more time than the methods now current. Finally, if the accrued economic cost of education is desired, it is imperative that a full set of asset and liability accounts be opened, and that plant valuation and depreciation be computed with

something approximating scientific accuracy. If a degree of refinement in the computation of costs is desired including pupil-clock-hour costs, a still more elaborate system is necessary.

If nothing more than a cash disbursement basis is desired, with the computation of unit costs by functions, instruction divisions, and organization units, a system comparable to the *Simplified School Accounting System* described above is ample.

Peel's system is flexible enough so that the more refined technique outlined here — including imputed interest, depreciation, and accrued economic costs — can be developed, while it permits of accrual accounting. It also lends itself readily to the computation of refined unit costs, such as the student-clock-hour.

The system outlined by Engelhardt and Von Borgerode is simpler than Peel's but has all of its merits. It undoubtedly represents the greatest advance yet made in this field.

The accounting system a superintendent and a board of education will develop will be conditioned on the facilities for accounting coupled with their desire to use more or less refined techniques to secure data for the formulation of policies.

ACCOUNTING FOR PLANT DEPRECIATION

The annual depreciation of the plant, which will be discussed in detail in a later chapter — "Maintenance of the Plant" — constitutes a legitimate cost charge against the educational system. Yet few accounting systems in use make any attempt to care for it in this way. The few that do have no uniform method of computing depreciation. In corporation accounting, depreciation of the plant constitutes one of the charges against profits for which provision must be made out of the gross profits in the form of an allowance or reserve. One of the few published attempts to estimate school plant

depreciation is in Strayer and Haig's *The Financing of Education in the State of New York*.¹ Without any doubt a careful study should be made of school plant depreciation and a figure arrived at for each type of building and for the various kinds of equipment. These figures will represent a fair depreciation. Such figures should then be used in calculating the depreciation of the plant each year. Some writers argue that this charge should be added to the cost of education as usually computed.

IMPUTED INTEREST

The interest charge universally included in school costs is the interest paid on bonded indebtedness. As a matter of fact, the total amount invested in the school plant of a community represents productive capital which cannot be used elsewhere because it is tied up in the school plant. The community is, in effect, then, paying a charge which is a reasonable rate of interest chargeable against the entire investment in the plant. The imputed interest will always exceed the cash payments for interest unless the outstanding indebtedness on the plant exceeds its actual valuation.

TWO METHODS OF COMPUTING EDUCATIONAL COSTS

It is obvious from the foregoing discussions that educational costs may be computed in two ways. The cash disbursement method which is almost universally used in school accounting takes into consideration only the actual cash paid out for current expense, interest and principal obligations, and capital outlay. It does not take into account the interest charge on plant investment, or depreciation. The accrued economic cost of education, on the other hand, includes not only current expense but depreciation and interest on the entire capital invested in the plant. It includes, in

¹ George D. Strayer and Robert M. Haig, *The Financing of Education in the State of New York*. (Published in 1923 by The Macmillan Company as one of the reports of the Educational Finance Inquiry Commission.)

short, money's worth actually used up and represents in a very real sense the true cost of education to a community. School accounting systems in general are so set up that only the costs on a cash disbursement basis can be computed.

INTERNAL SCHOOL ACCOUNTING

The discussion of the subject of this chapter in the sections preceding has concerned itself with the accounting for funds used in the support of the public school system itself. Within the system, however, are numerous activities — athletics, societies, clubs, and what not — requiring funds which are forthcoming, not from public taxation and the other sources cited in an earlier section, but from dues, donations, and the activities of the organizations themselves. In a large high school the total amount involved in the course of a school year will average six to seven dollars and may exceed ten dollars per pupil enrolled, not including the school lunchroom. An adequate financial accounting system is necessary for the proper functioning of these organizations, and for their continuing from year to year. In addition to these types of activities there are lunchrooms, book and supply rooms, and the like, which accommodate the pupils of the schools but do not constitute a part of the educational program. These are usually handled through revolving funds, or funds advanced by the board of education.

Some individual in the central office should be designated as financial secretary for extracurricular activities. In a large high school the full-time service of one individual may be required. In a smaller high school the office secretary, or trustworthy pupils in the commerce department, may handle the work. In any event the finances must be supervised in some manner by the school. The accounting system installed should be simple but adequate to the needs of the school.¹

¹Excellent forms are suggested in Chapter XXXII of N. L. and Fred Engelhardt's *Public School Business Administration*.

All receipts and disbursements should be handled in a businesslike manner so that reports can be rendered regularly and periodical audits be made. The finances of the other services mentioned should likewise be handled in a thoroughly businesslike manner under the direction of properly qualified individuals and under the supervision of the central administrative office. It is without the scope of the present treatise to set up criteria or outline systems of accounting applicable, but annotated references to materials providing such helps will be found in the bibliography attached to this chapter for those who are interested.¹

CONCLUSION

An adequate school accounting system is of paramount importance in modern school administration. Without such a system the school executives lack the data for the intelligent formulation of policies, all of which have their financial aspects. The data thus made available are necessary to sound budgetary procedure. Finally, the financial reports depend for their accuracy on the soundness of the accounting system. These reports not only furnish state and national offices with necessary statistics, but they are of use in keeping before the public the needs and accomplishments of the school system.

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CHAPTER SEVEN

FINANCIAL REPORTS AND PUBLICITY

PUBLIC education is demanding increasingly large sums of money for current expenses, for debt service, and for capital outlay. In view of this situation it is imperative that the public be kept accurately and honestly informed in connection with all major school activities — particularly those involving the expenditure of money. For this purpose every state has some sort of legal requirement that financial reports be compiled and published. But boards of education and administrators, not content with the fulfillment of this requirement, provide many other kinds of reports.

Reports, however, are essential for another reason fully as fundamental — namely, the formulating of policies. The various financial and statistical reports, carefully and accurately compiled, supply the data from which administrative policies may be evolved. Reports on cost of heating buildings using certain types of fuel, for example, will guide a board of education in determining the fuel to be used.

PRINCIPLES OF FINANCIAL REPORTING

If financial reports are to serve adequately and fully the two purposes outlined in the introductory statement, certain principles must be observed. Among them are these:

1. Reports must be carefully and accurately prepared.
2. They must be susceptible of easy and accurate interpretation by those for whose consumption they are prepared.
3. They must present facts honestly, fairly, and clearly.
4. They must be based upon a sound accounting system so designed as to furnish the facts to be contained in the reports.
5. They should follow, as far as possible, standard forms and standard schedules.

TYPES OF FINANCIAL STATEMENTS

The financial statements ordinarily compiled by public school officials may be classified into the following groups: (1) reports to the United States Bureau of Education, (2) reports to state and county officials, (3) reports to municipal officials, (4) reports of the board of education to the public, and (5) reports of the administrative officers to the board of education.

Some of these reports are issued periodically and some irregularly. Each group will be discussed at some length in subsequent sections.

United States Bureau of Education reports. The United States Bureau of Education in the Department of the Interior is the one governmental agency that attempts to secure, in an accurate and scientific manner, information in the field of education. Recently the National Education Association has established a Research Division that is rendering highly efficient service in securing and reporting many kinds of educational facts. Both of these agencies are powerless, however, to compel school officials to supply data. Consequently returns are always incomplete, but there is such a widespread spirit of coöperation among the educators of the country that an adequate sampling of facts is always secured.

While the Bureau of Education sends out many requests for data covering special and limited fields, it requests the compiling regularly of one report of paramount importance to the school systems of the country — that of the General Statistics and Fiscal Statistics for cities, towns, boroughs, and villages.

The General Statistics report includes such items as the number of supervisors, principals, teaching positions, pupils enrolled, aggregate attendance, average attendance, days school was in session, number of schools and school buildings, and private and parochial school enrollment for each type of

school — kindergartens, elementary schools, special schools, junior high schools, high schools, vocational schools, teacher training schools, and colleges. Not the least commendable aspect of this report blank is the minute and detailed directions accompanying it which insure the securing of comparable data.

The fiscal report cares for financial data, including the revenues received from the various sources indicated in Chapter V, page 124. Payments are classified by types of schools, and follow in general the schedule outlined in Chapter VI, pages 135 to 137, though many of the items of that schedule are further subdivided into "salaries" and "other objects." Here again elaborate directions for compiling the data accompany the report form to the end that the data secured should be comparable.¹

This report, together with the various reports issued by the Research Division of the National Education Association, gives students of finance and administrators the data from which nation-wide studies can be made. It is imperative, then, that these reports be compiled with extreme care.

State and county reports. Ordinarily the state requires from each of the various governmental units under its control two kinds of school reports — statistical and financial. The local school district may report directly to the state as in the case of large cities, or to some intermediate division such as the county, which, in turn, reports to the state. Or reports may be made in part to the intermediate unit and in part to the state.

The financial report may be a very brief statement of income and expenditures by funds, or it may be an elaborate summary of a most detailed type.

The New York State report, for example, requires a state-

¹The schedule of accounts in the sample budget, pages 113-122, follows closely the items called for on this report.

ment on practically every item outlined in Chapter VI, pages 113 to 126. Each of these items is subdivided into "salaries" and "other objects," while "instructional service" is divided not only into "day schools" and "night schools," but into several other categories, such as "kindergarten," "elementary," "secondary," and "vocational" — in short, into every instructional division possible. Other state reports are even more exacting in their requirements.

The purpose of these detailed reports is to afford financial data so carefully compiled that comparisons are possible among the school systems of the state. Even then there is no positive assurance that all cities will allocate their items in precisely the same manner. The writer examined the financial records of an Eastern city which showed an unusually large outlay for maintenance. On investigation he found that a fifty-thousand-dollar item belonging to capital outlay had been allocated to maintenance. But the increasing care which is now being exercised probably renders it possible to make comparisons among the larger divisions of school expenditures with increasing confidence in their accuracy.

Like the financial reports, the state statistical reports vary from those requiring few items of information to the most elaborate and detailed. Where but few facts are required, they include such items as the school enumeration, total enrollment, average enrollment, average daily attendance, enrollment and attendance by instruction divisions — such as elementary schools and high schools — and number of school buildings. The more elaborate reports require in addition detailed statements concerning the training and salaries of the staff, their certificates, the enrollment and attendance by grades, and the subjects pursued in each grade together with the number of pupils taking each.

The purpose here is the same as in the case of the financial reports, to supply accurate information from which com-

parisons can be made within the state. Since this is the purpose, it is of paramount importance that the data be carefully and accurately compiled and filed promptly with the proper state officer. At present many of the report forms supplied by state and county officials are so confusing in their directions that it is almost impossible to secure accurate information from them.

Municipal reports. Fiscally dependent school districts are usually compelled to make reports of several types to the municipalities of which they are a part. The budget is the one most commonly submitted, while, in the cities where a city fiscal officer acts as custodian of the school funds, certified pay rolls are submitted. Periodic budget and fund statements are not infrequently required in many cities of this type.

Board of education reports to the public. Boards of education are frequently required to publish in some form or another financial statements and reports. The most frequent forms of these are (1) annual report of income and expenditures — by funds where fund accounting is required, (2) budget estimates for the ensuing fiscal period, and (3) monthly statement of income and expenditures — the latter sometimes item by item.

Table 21, adapted from Neale, shows the provisions of the laws of twenty-three states requiring the rendering or publishing of financial reports.¹

The budget submitted to the "town meeting" in New England illustrates the second type of report. The third type is the familiar more or less detailed periodic financial statement of boards of education, which is published in many city and county papers.

¹ M. G. Neale, *School Reports as a Means of Securing Additional Support for Education in American Cities*, page 14. (Missouri Book Company, Columbia, Missouri; 1921. Used by permission.)

TABLE 21
PROVISIONS IN STATE LAWS RELATIVE TO SCHOOL REPORTS ¹

	ALA.	COL.	CONN.	DEL.	IDAHO	ILLINOIS	IOWA	KANSAS	KY.	MAINE	MASS.	MICH.	MINN.	NEVADA	N. J.	N. MEX.	OHIO	OKLA.	OREGON	R. I.	S. D.	UTAH	WIS.
Annual printed report in pamphlet form required by law	X			X	X ⁴						X				X		X		X ⁸				
Written annual report to town meeting required										X													
Semi-annual financial report to be published in newspapers										X													
Annual financial report to be published in newspapers		X ²			X ³																		
Annual report to be printed either in pamphlet or newspaper								X	X ⁶		X ⁷		X			X		X		X		X	X ⁹
Proceedings of board to be published . .																							
Budget estimate to be published in newspaper							X ⁵							X					X				
Written report to board or school committee required		X																					
Printed course of study to be supplied to teachers and interested citizens . . .			X	X																			
Annual report to be either printed or read in open town meeting																				X			

¹ No provision relative to printed or written school reports designed for the local public was found in the statutes of other states. Capital X's indicate that reporting of general educational conditions and needs is required.
² Annually for other than first-class cities.
³ In independent districts.
⁴ For cities having a population of over 100,000.
⁵ Must include statement of receipts and expenditures.
⁶ "Shall publish annually" — "publish" is not defined.
⁷ "Shall cause to be published."
⁸ In cities of the first class. Content not defined.
⁹ Either to be published in newspaper or posted in five prominent places.

In addition to the foregoing which are required by law, many boards of education publish other reports, the fundamental purpose of which is to keep the public properly informed in financial matters. Among these are the following:

1. Reports on current financial conditions, including income and expenditure reports, reports from the tax collection agencies and from the school treasurer.
2. Debt service reports, including outstanding bonds with maturity dates and interest obligations by years for a period of time.
3. Property reports giving valuation of school properties.
4. Reports on school costs, giving data for the city whose board issues them, together with cost data from other cities of comparable size.
5. Budget reports showing condition of controlling accounts together with comparative data from other cities.
6. Fund statements where fund accounting is required.

These public statements should be accompanied by charts, graphs, figures, and other graphic and pictorial devices to make the data clear to the average reader. They must be free from unnecessary technicalities and minute details. The larger policies should be made to stand out clearly with a lucid, fair, and honest presentation of facts.

Reports of administrative officers to the board of education. The board of education must from time to time be supplied with detailed reports that can be used as the basis for checking the policies of its administrative officers. The administrative officers, in turn, need reports to formulate policies which they will recommend to the board for adoption.

The reports necessary for the board are (1) the annual budget (see the budgets reproduced on pages 110 to 126 of Chapter V); (2) periodic budget statements showing condition of controlling accounts (see Forms 5 and 6 in Appen-

dix); (3) periodic financial statements showing income and expenditures by funds, together with fund balances and allocation of expenditures by functions (the former may be submitted by the treasurer while the latter should be compiled by the board's fiscal officers); (4) periodic statements on school costs with comparable data from other cities; (5) inventory statement showing stores on hand and school property owned; and (6) annual financial statement, including a balance sheet with its supporting schedules.

The chief differences between these reports and those given the public by the board will be in the detail with which they are prepared. The public reports will be so stripped of unnecessary detail that they will show larger policies in their true perspective, while the reports submitted by administrative officers will be prepared in as great detail as may be necessary or desirable to show the facts that the board needs. No attempt should be made to keep the latter non-technical.

In the larger school systems where the administrative officers must delegate a large part of their work, they must, in turn, have reports and statements from their subordinates. The chief executive officer should have reports from his assistant in charge of finance, his supervisor of buildings, and his superintendent of stores — in short, from every member of his staff having charge of records that have a bearing on the formulation of policies.

SCHOOL PUBLICITY

School administrators and members of boards of education are keenly interested in the agencies through which the needs of the schools and the importance of their work may be presented to the public. Dean M. G. Neale has listed twenty media through which school facts are presented in printed form to the American people. These are as follows:¹

¹ *Op. cit.*, page 68.

1. Annual reports
2. Biennial reports
3. Triennial reports
4. Monographs
5. School manuals
6. School directories
7. Courses of study
8. Rules and regulations of the school board
9. News bulletin of the "house organ" type
10. Campaign bulletins
11. Reports in newspapers (paid-for space)
12. Newspaper display advertisements
13. Posters and display cards
14. Folders
15. Surveys
16. Advance prints and reprints from the annual report
17. News bulletins published by the teachers
18. Mimeographed or multigraphed circulars, bulletins, and booklets
19. Free newspaper news and feature articles
20. Slides and motion pictures

Sixteen of these were ranked by 106 judges with respect to their value as effective means for reaching the public. Using the composite judgment of the judges, Neale ranks them as follows :¹

1. Free newspaper news and feature articles
2. Newspaper display advertisements
3. Campaign bulletin
4. News bulletin of the "house organ" type
5. Slides and motion pictures
6. Posters and display cards
7. Mimeographed or multigraphed circulars
8. Folders
9. Monographs
10. Courses of study
11. Annual reports
12. School manual
13. School directories

¹ *Op. cit.*, page 59.

14. Biennial reports
15. Rules and regulations of the school board
16. Triennial reports

This ranking is of particular interest because it shows the high esteem in which newspaper publicity is held and the low place assigned to annual, biennial, and triennial reports. On this subject Neale says: ¹

It is submitted that the annual, biennial, and triennial school reports as they are published today in American cities do not furnish the means for an adequate program of giving to the great body of citizens the information which they should have as a basis for supporting the public schools.

Neale's program of publicity. After formulating a set of principles for school reporting, Dean Neale submits the type of program of school reporting which is quoted here: ²

I. *An annual report.* A report should be published annually to present complete statistical and other informational data for the use of the official educational staff and certain especially interested citizen leaders of the community. This report might consist, as in some of the larger cities at the present time, of the collection of pamphlets and monographs issued from time to time during the school year, supplemented by certain technical statistical material published daily for the sake of record and convenient reference.

II. *A timely financial report.* An annual publication of the budget estimate for the coming school year should be presented to the public before the annual school election or at the time when the community is actively interested in the determination of the extent of the financial support necessary for the coming year. The publication of the budget estimates in annual reports issued by cities at the present time could be of no great significance because of the fact that figures have lost their news value owing to the great length of time which has elapsed between the date when the budget was a live issue and the date of the publication of the report.

III. *Monograph on live issues.* The same principle which applies to the publication of the budget estimate and financial accounts

¹ *Op. cit.*, page 91.

² *Op. cit.*, pages 102-105.

of the school district applies equally to publications along many other lines. If the school system, for instance, is carrying on a health campaign, the publication of a description of the work being done and the aims to be accomplished would have infinitely greater news value if it were published while the actual work was going forward, than if, after a period of four or five months, it appeared in a lengthy annual report.

IV. A "*house organ*" publication. In order to reach the general public effectively the house organ type of school bulletin or newspaper should be published. This paper should go into the homes of all parents and citizens generally for the purpose of creating good will and appreciation of the work of the school and to bring about a better understanding of what the schools are seeking to accomplish.

V. *Where the annual report to the public is required by law.* In the states in which an annual report to the public is required by law, and where the statute requires that it shall deal with the condition and needs of the schools, an application of the principles stated would mean the omission of directories of school officials, buildings, teachers, students, and alumni; courses of study; rules and regulations of the school board; copied proceedings of the school board; itemized statements of expenditures (except where specifically required by law); graduation programs and lists of graduates; records of prizes and awards.

It would mean also two other things. In the first place, it would necessitate the adoption of a specific purpose for the annual report. This purpose would be more specific than to give a record of the stewardship of the board of education or a description of the condition of the school system. It might be a description of these things but it would be a description of them with a definite purpose in view. This would make it possible for even an annual report to have point; to present subject matter as related to a definitely recommended line of action.

In the second place, it would mean that the various supervisors' and principals' reports would be omitted in the forms in which they now appear in most school reports. If supervisors and principals are to contribute, and it is certainly believed that they should in the largest possible way, their contribution should take the form of coöperative work on a definite program, and instead of their contribution being addressed to the superintendent, it would be addressed to the general public and written with its influence on the general public clearly in mind.

VI. *A definite program of coöperation with newspapers.* A definite policy of furnishing the newspapers of the city with the kind of information about the schools which constitutes news to which the public is entitled should be adopted. The proper use of newspapers as a means of reporting school facts to the public is perhaps the most effective means that school authorities are able to use. The ratings of school publications [pages 173-174] show that many city superintendents clearly recognize this fact. Since newspapers strive to adapt their style to the capacities and reading habits of the general public, and since in most American cities some newspaper goes into practically every home, they afford a means of reaching a wider range of people than any other publicity medium. Moreover, newspapers generally recognize the news value of school stories. The real need, then, is for a definite systematic plan for furnishing the newspapers with the facts out of which news stories about the schools may be made.

VII. *A trained personnel for school reporting.* There should be definite provision for the proper personnel in every city school system to do the work which is necessary in any adequate system of school reporting. In the larger cities there should be a publicity or publications expert whose duty should be to coöperate with the newspapers of the city in the preparation of the kind of news and feature articles which they will publish and to prepare the various school publications designed for the public in such a way that they will be read and understood.

In all too many cases this potential news does not contribute to public interest in the support of education. This is because school superintendents, principals, and other school officials are busy with routine matters, do not have the newspaper point of view, and have acquired in their various scientific studies a somewhat highly technical, if not ponderous, style of writing which makes it very difficult to put school reports into such form that they will be read by the general public.

Other types of publicity. The types of publicity in written form, while constituting the most important group, do not constitute the sole means of publicity. There is, first, the oral publicity given by the pupils, reaching more homes than any other single factor save only the newspaper or a house organ distributed to every home in the city. No school

administrator can afford to overlook school pupils as a potent factor in school publicity.

Another type of publicity consists of addresses and informal talks by representatives of the school system before clubs, parent-teacher organizations, and various community groups. The radio is also becoming an effective tool for this purpose.

Still another type of publicity consists in bringing parents, patrons, and other interested persons into the school buildings as spectators of the work going on. Moving pictures of various school activities afford another means of bringing school work to the attention of those who cannot be induced to come to school.

Finally, the effect of the active participation of school people in community undertakings is not to be overlooked or its importance underestimated. The schools should be represented in the churches, the classification clubs, the chamber of commerce, the fraternal orders, and any other organization whose membership represents a cross section of some part of the community.

CONCLUSION

Financial reporting is necessary for securing and retaining public support, and for guiding the board and its officers in formulating policies and checking up on their effectiveness. The reports must be accurately compiled and clearly presented. When prepared for the public they must be simple, non-technical, and so formulated that they emphasize large policies. A systematic program of publicity which will touch the community at as many points as possible is desirable.

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CHAPTER EIGHT

PAY-ROLL ACCOUNTING

PAY-ROLL accounting constitutes an important phase of the business activities of any public school system, especially if a large staff is employed; for from 70 to 80 per cent of the budget of a modern city school system is expended for salaries and wages. But thus far pay-roll procedures have escaped extensive investigation, and there is consequently a surprising lack of uniformity in regard to them. The plan used in the average city is the product of custom rather than the result of scientific study. Pay-roll accounting should, however, be recognized as a problem common to all school systems; basic principles should be formulated and more or less standard procedures developed for cities of different sizes. Industrial establishments, particularly where piecework and the bonus systems are in vogue, have long since established such standards.

FUNCTIONS AND FORMS OF THE PAY ROLL

Pay-roll accounting has, in general, three fundamental functions: (1) the accumulation of the proper service data by which the various employees of a school district may be paid; (2) the accumulation of data whereby school costs, direct and indirect, may be compiled in accordance with the school accounting systems in use; and (3) the accumulation of accounting data whereby the proper controlling accounts may be debited and credited in the distribution of the pay roll.

These functions would seem to need little elaboration. The time served by individual employees must be recorded in such a manner that these individuals may be paid all that they have rightfully earned with no possibility of an overpayment. At the same time the data must be so presented that proper accounting records may be compiled for com-

puting cost data and for procuring the proper accounting controls. Not infrequently pay-roll forms call for other data which, though interesting and valuable from certain points of view, contribute in no way to any of the functions here indicated.

When pay rolls are classified on a purely functional basis, three different types may be designated — instructional, custodial, and maintenance. The instructional pay roll includes all officers, teachers, and clerks connected in any manner with the instructional staff. The custodial pay roll includes all janitors, engineers, firemen, and other persons engaged in the operation of the buildings. The maintenance pay roll is used for the members of the repair force. In addition an irregular pay roll may include the help employed in other types of service than the three just listed, such as persons employed in the cafeteria. In the medium-size cities the pay rolls for operation and maintenance may be combined; in the smaller city there may be but two pay rolls — one for the members of the instructional staff and one for all employees of the system. In a very small town or a consolidated school a single pay roll may include all employees. But whatever the form and number of the pay rolls their functions are everywhere the same.

The pay roll may appear in any one of three forms — loose-leaf sheets punched for binding, loose-leaf sheets unpunched, or books permanently bound. The use of the loose-leaf form has become so prevalent that in only two of thirty-seven cities visited by the writer was a permanently bound book found to be in use. Various time cards and service records (see Forms 12 and 16 in Appendix) are used as additional sources from which the pay rolls are compiled (see Form 14 in Appendix). In not a few instances the pay rolls themselves are so constructed that they comprise the only time or service records kept.

CLASSIFICATION OF PAY-ROLL DATA

An examination of the pay-roll forms used by many cities in various parts of the country shows six different types of data appearing. They are:

1. Descriptive data including the school, the name of the employee, and the dates covered by the report;
2. Service data such as days present, days absent, days absent for sickness and for other causes;
3. Substitute data including service records of substitutes and the names of individuals for whom they served;
4. Financial data such as monthly salary, pension and other deductions, extras, additions, and amount due;
5. Certification blanks for signature of the principal or other officer;
6. Accounting provisions for allocation of the various pay-roll items to the proper operation and controlling accounts.

So little uniformity prevails that from the one hundred twenty different items found on the pay-roll forms of thirty-three cities, only one was common to all, and only 15 to 25 per cent of the forms.¹

METHODS OF COMPILING THE PAY ROLL

A wide range of variability exists in methods of compiling the pay roll. A few of the many plans in operation are indicated here:

1. The building principal compiles the entire pay roll, including the names, time and service records, and amount due each employee; the employee certifies to the correctness of the record by signing her name on a blank line provided for that purpose.

¹ F. E. Weed and H. P. Smith, "Pay-Roll Procedures in City School Systems," *American School Board Journal*: Vol. 77: No. 5, page 47 (November, 1928), and No. 6, page 39 (December, 1928). The data for the outlines on pages 191-194 are adapted from this report.

2. The building principal compiles the part of the pay roll which includes the writing of the name and the service rendered by the employee; the other work is done in the central office by clerks assigned to that task.
3. The principal submits a time or service record, but the pay roll is compiled in the central office on the basis of these records.
4. The principal submits a report covering only the absences of regular employees and the service rendered by substitutes; computation of pay-roll data is left to the central office.
5. The central office compiles the pay roll but sends it to the principal for the inclusion of time and service data. These computations are made by the central office force.¹
6. The employee prepares her own service record, which receives the certification of the principal and is forwarded by him to the central office for use in compiling the pay roll.

These illustrate a few of the current methods of preparing the pay rolls of the instructional and operating staffs. In the case of the maintenance and irregular pay rolls, however, time sheets (see Form 12 in Appendix) are usually submitted to the central office, and from these the pay roll is compiled. These time sheets are certified, as a rule, by a foreman or other executive officer of the school district; but they may be signed by the worker himself without any other certification.

PRINCIPLES OF PAY-ROLL PROCEDURE

The author, in coöperation with Mr. F. E. Weed,² has attempted to formulate a set of principles applicable to pay-

¹ Sometimes an addressograph is used to enter the name and basic salary data of the members of the staff regularly employed.

² The results of this study are recorded in "Pay-Roll Procedures in City School Systems." (For further information about this article see footnote on page 183.)

roll practices. Many cities were visited, industrial establishments were investigated, and the literature of business administration searched carefully. As a result, certain conclusions were drawn relative to basic principles to be followed and forms to be used. These conclusions are summarized in the tables with which this chapter concludes.

Much can be learned from successful business and industrial organizations whose pay-roll practices are somewhat analogous to those of public school systems. In the interests of economy and efficiency such organizations have long since standardized their practices in accordance with well-established principles. A decided emphasis was found upon the following :

1. Centralization of pay-roll procedure ;
2. A simple, but effective, check upon the time of employees ;
3. Elimination of cumbersome accounting ;
4. Combination of pay-roll forms and time reports ;
5. Short-circuiting of pay, such as the depositing of the pay of employees to their credit in banks designated by the employees.

In the survey report of the public school system of Springfield, Massachusetts, there is listed the best set of such general principles offered to public schools that the writer has discovered. They are as follows :¹

1. The work of pay-roll making should fall as much as possible upon the central office. Principals should not be unduly burdened with the clerical work involved in this field.
2. Pay rolls should be cumulative, thus reducing the duplication of names and the pay-roll data to a minimum.
3. The accounting for substitute service should be rigid. In developing this service, the object should be to make substitute service as efficient as regular teaching service.

¹ *Report of the Survey of Certain Aspects of the Public School System of Springfield, Massachusetts* (School Year 1923-1924), pages 112 ff. (Teachers College, Columbia University, New York. Used by permission.)

4. The time report which principals submit concerning teachers' absences should carry all data required for action upon pay allowances for absence. Such pay allowance should be regulated from the central office and not from the individual schools.

5. Pay-roll procedure, in general, should be so planned that all payment of employees be executed promptly but without undue haste in any phase of the procedure.

If these principles are followed, the actual work of compiling the pay roll falls on the central office.

TIME AND SERVICE RECORDS

Of instructional and operative employees. Some sort of time or service record is the basis of any adequate pay-roll system, for through these alone may overpayment be avoided and underpayment guarded against. Many large industrial establishments and department stores use time clocks with "in" and "out" boards. Each worker punches the clock when he goes on duty, putting his card on the "in" board. When he goes off duty, he punches the clock again, putting his card on the "out" board. This time card, which indicates the exact time the worker has been on duty, forms the basis on which his compensation is computed. In some large school buildings the time clock may be of service, but the plan most commonly used is that of requiring each teacher to indicate in a register the time of her daily arrival and departure. Such a record, if properly kept, probably constitutes the most satisfactory type of time record for regular and substitute teachers. The plan should be extended to include the members of the custodial staff unless the plant is unusually large. In such cases, time clocks should be installed for keeping time records for all employees of the system.

From these registers the principal's time and service report to the central office should be made. The reasons for the absence of any regular employee with the required certification, together with the name and time of the substitute,

should be included. In short, this report should be a complete one from which the pay roll may be compiled.

Of maintenance and irregular employees. A central point should be designated to which members of the maintenance staff and irregular employees should report for duty. At this point a time clock should be installed. The time cards of these employees should then be taken with them to the various school buildings to which they are assigned, and where the head custodian or the principal should certify to the time spent in each building. Time will necessarily be consumed in going from building to building, but this is inevitable not only in the school system, but in every industry where workers must travel from one building to another. The matter of prime importance is to reduce this time to a minimum. The jobs and buildings to which the worker is assigned should also be listed on his time card so that the cost of the job may be computed and building distributions be made.

Importance of time and service records. The question of time is undoubtedly more important than administrators realize. Invoices would never pass in the majority of school systems without definite written assurance that the materials and supplies had been received, yet the pay rolls in these same systems are disbursed without authentic evidence that the amounts paid have actually been earned. A time record carrying the certification of a responsible officer is as essential here as the acknowledgment of receipt is to an invoice.

COMPILING THE PAY ROLL

The clerical work of compiling pay rolls from the basic time data should be reduced to a minimum. The records should be cumulative, loose-leaf forms, requiring the writing of the names and basic salary data but once for a period of months.¹ Printed lists and addressograph stencils are being

¹ George D. Strayer and N. L. Engelhardt, *School Records and Reports*, pages 27 ff. (Teachers College, Columbia University, New York; 1923.)

utilized for this purpose. Pay-roll calculators should be used for making the actual computations. Then addressograph stencils may be so planned that they are utilized in the writing of the warrants. Again the warrants may be so written that the name and address of the individual appears on its face in such a position that a "window" envelope can be utilized, thus saving the time and labor involved in addressing an envelope to each employee.

In the study referred to above an attempt was made through the expert-judgment method to determine the basic items that should appear on the pay-roll form. The following list is the result: name of school, period covered by pay roll, names of employees, employee's position in the school system, rate of pay of each, dates absent, deductions, amount due each employee, certification by the proper officers, number of check or warrant used in paying employee, and provision for allocation of items to the proper controlling accounts.

ACCOUNTING PROVISIONS

The pay roll should be summarized so that totals for the operating accounts may be procured and posted properly. This summary should be so compiled that the totals are computed by functions, instructional divisions, and administrative units. If an elaborate cost system is in use, such as one described in the section on school accounting,¹ other subdivisions should be made. In addition to these facts, the pay roll should contain such data that each employee under contract will receive full compensation for service rendered and will not be overpaid. The usual method is to divide the salary into a number of equal divisions corresponding to the periods of service. This seems to be the favorite method of obtaining accounting control over each individual's salary; but one finds not infrequently the keeping of individual

¹ See pages 131 ff.

accounts in a subsidiary pay-roll ledger (see Form 13 in Appendix).

COMPENSATION OF ABSENT TEACHERS

The payment of teachers who are absent because of sickness and other legitimate causes constitutes a problem which every board of education is called upon to solve. The justice of the teacher's claim cannot be ignored, but taxpayers object incessantly to double pay for service rendered. The result is

TABLE 22

PAY GRANTED IN CERTAIN AMERICAN CITIES TO TEACHERS DURING
ABSENCE ON ACCOUNT OF SICKNESS

TIME AND PAY ALLOWED A TEACHER IN CASE OF SICKNESS	CITIES FROM 8,000 TO 29,999	CITIES FROM 30,000 TO 99,999	CITIES OVER 100,000	TOTAL	PER CENT OF TOTAL
Full pay					
For 20 days	7	3	—	10	3.0
For 15 days	1	3	1	5	1.5
For 10 days	29	17	6	52	15.6
For 5 days	35	8	2	45	13.5
For 3 days	4	2	—	6	1.8
For 10 days, less substitute's time	3	1	—	4	1.2
For indefinite period, less substitute's pay .	18	3	—	21	6.3
For indefinite period .	18	3	—	21	6.3
Half pay					
For 30 days	2	—	2	4	1.2
For 20 days	7	6	2	15	4.5
For 10 days	5	2	1	8	2.4
For indefinite time . .	6	—	1	7	2.1
Full pay for 5 days and half pay for 5 days .	4	2	—	6	1.8
Various other plans, no one of which has a frequency in excess of 3 — that is, of .9 per cent	53	34	20	107	32.5
No report	4	1	1	6	1.8
No pay granted	13	1	1	15	4.5
Total	209	86	37	332	100

usually some sort of compromise which allows the teacher full pay in some cases and part pay in others for a limited period of time. Table 22¹ is given here to show the practices in 332 American cities having a population in excess of eight thousand.

Ninety-seven different practices were reported by the 332 cities, but in 32.5 per cent of the cities the plan had a frequency of 3 or fewer — usually but 1. One fact is clearly evident — no one practice prevails. The mode is full pay for ten days of sickness; and this is probably as satisfactory a method as is now possible. Two states, Indiana and Washington, prohibit by law the payment of teachers on sick leave. Such a practice can hardly be defended on any basis.

SUBSTITUTE TEACHER SERVICE

A study recently made by the United States Bureau of Education summarizes the situation respecting the employment of substitute teachers thus:²

Of 44 cities having a population of one hundred thousand or more replying to the questionnaire concerning the employment of permanent substitute teachers on an annual, or a school-year, pay status, 15 reported that they employed such teachers. Of 116 cities of thirty thousand to one hundred thousand replying to the questionnaire, 22 report that they employ such teachers.

Permanent and temporary substitutes in cities of one hundred thousand population, or more, are required as a rule to have the same qualifications as the regular teachers. In cities with thirty thousand to one hundred thousand population permanent substitutes are generally required to have the same qualifications as the regular teachers, but in this group of cities 40 per cent do not require the same qualifications of temporary substitutes as of regular teachers.

¹ The data in this table were procured from a compilation made by the Department of Educational Administration of Teachers College, Columbia University.

² *City School Leaflet*, No. 21 (April, 1926). (United States Bureau of Education, Government Printing Office, Washington.)

The problem of the substitute teacher is always a difficult one. The best solution is to employ a number of permanent substitutes having satisfactory qualifications and receiving adequate compensation; this plan, however, is not always practicable. A system must then rely on properly qualified people who are competent and willing to act in that capacity. In any event, a plan should be adopted by which the best interests of the children will be served.

PRACTICES APPLICABLE IN PAY-ROLL PROCEDURE

The author and Mr. F. E. Weed have attempted to formulate, through examination of pay-roll practices, both industrial and school, and through consultation with expert judgment, statements of practices affecting the various parts of the school organization and applicable to cities of various sizes. The activities are classified under time keeping, time reporting, compilation of pay roll, distribution of pay, and accounting. Their extent is shown in the following outlines:

PRACTICES APPLICABLE IN SMALL CITIES AND SCHOOL DISTRICTS USING BUT ONE PAY ROLL

- I. Time keeping
 - a. Regular employees register in and out daily (desirable but not essential).
 - b. Principal keeps the time for all regular and substitute employees in his building.
- II. Time reporting
 - a. Report days of absence only, with reasons.
 - b. Report cases of tardiness, with reasons therefor.
 - c. Report substitute employees on same report.
 - d. Supplement report of sickness for which compensation is allowed with physicians' certificates (desirable but not essential).
 - e. Balance time of substitutes with time not otherwise accounted for.

- f.* Show allocation by coding to various functions and objects.
- g.* Certified time report filed by principal in proper office.
- III. Compilation of pay roll
 - a.* Compile pay roll in central office.
 - b.* Write names and basic data but once for several months.
 - c.* Make computations and deductions in central office where all wage, pension, and salary data should be kept.
 - d.* Allocate items to facilitate posting to various accounts.
- IV. Distribution of pay
 - a.* Pay by warrant or check.
 - b.* Use delivery system which best serves local needs.
- V. Accounting
 - a.* Post various totals to general controlling accounts.
 - b.* Post individual contract salary items to subsidiary pay-roll ledger.
 - c.* Audit at least once each year.

PRACTICES APPLICABLE IN LARGER CITIES TO PAY ROLL OF INSTRUCTIONAL STAFF

- I. Time keeping
 - a.* All employees register in and out daily.
 - b.* Principal keeps time of all regular and substitute employees in his building.
- II. Time reporting
 - a.* Report days of absence only, with reasons.
 - b.* Report cases of tardiness with reasons therefor.
 - c.* Report substitute employees on same report. Supplement report of sickness for which compensation is allowed with physicians' certificates.
- III. Compilation of pay roll
 - a.* Compile pay roll in central office.
 - b.* Compile at least three different pay rolls in cities above 30,000 (optional in smaller cities).
 - c.* Write names and basic data but once for several months.
 - d.* Make computations and deductions in central office where all wage, pension, and salary data should be kept.
 - e.* In cities above 100,000 use mechanical devices — addressographs, signographs, and accounting machines.
 - f.* Show allocation of amounts to various functions and objects by coding.

IV. Distribution of pay

- a.* Pay by warrant or check.
- b.* Distribute through building principal, or by mail, or by depositing amounts to credit of employees in banks designated by employees.
- c.* Stagger pay dates of various groups of employees in cities over 100,000.

V. Accounting

- a.* Post various totals to general controlling accounts.
- b.* Post individual contract salary items to subsidiary pay-roll ledger.
- c.* Audit periodically, at least once a year.

**PRACTICES APPLICABLE IN LARGER CITIES USING
SEPARATE PAY ROLL FOR MAINTENANCE STAFF**

I. Time keeping

- a.* Keep in the office of superintendent of buildings a detailed record of all men employed and discharged.
- b.* Prepare for each employee a time card showing classification, daily time record, and time of registering in and out.
- c.* Use for each employee a time slip on which he records time spent on each job to which he is assigned.
- d.* Have person under whose supervision work is done certify to each time slip.
- e.* Post time slips to time sheets showing allocation to jobs and objects in functional classification.

II. Time reporting

- a.* Report time to central office from office of superintendent of buildings.
- b.* Report on time sheets made up from time slips and time cards.

III. Compilation of pay roll

- a.* Compile pay roll from data reported on time sheets.
- b.* Make all deductions and extensions in central office.
- c.* Balance names on pay roll with employed-and-discharged records in office of superintendent of buildings.
- d.* Code for allocation to proper controlling accounts.

IV. Distribution of pay

- a.* Pay by warrant or check.
- b.* Pay semi-monthly or weekly.

- c.* Deliver through buildings or mail.
- d.* Stagger pay dates in cities above 100,000.
- V. Accounting
 - a.* Allocate to proper controlling accounts.
 - b.* Audit periodically, but at least once a year.

PRACTICES APPLICABLE IN CITIES COMPILING SEPARATE PAY ROLL FOR OPERATION STAFF

- I. Time keeping
 - a.* All operation employees register in and out daily.
 - b.* Principal keeps the time for all regular and substitute employees in his building.
 - c.* In a very large building employing a custodian who directs the work of several assistants, principal may delegate him to keep time of operation employees.
- II. Time reporting
 - a.* Report days of service to executive officer in charge of school building operation.
 - b.* Report substitute employees on same report.
 - c.* Balance time of substitutes with time not otherwise accounted for.
 - d.* Show proper allocations by coding.
 - e.* File report properly certified in central office.
- III. Compilation of pay roll
 - a.* Compile pay roll in central office.
 - b.* Write names and basic data but once for a period of several months.
 - c.* Make computations and deductions in central office where all wage, pension, and salary data should be kept.
 - d.* Allocate items to facilitate posting to various accounts.
- IV. Distribution of pay
 - a.* Pay by warrant or check.
 - b.* Distribute through building principal, or by mail.
 - c.* Stagger pay dates in larger cities.
- V. Accounting
 - a.* Post various totals to general controlling accounts.
 - b.* Post individual contract salary items to subsidiary pay-roll ledger.
 - c.* Audit periodically.

CONCLUSION

Pay-roll accounting is more important than is generally realized, since a large proportion of the total amount of money spent by a school system is included on the pay-roll sheets. In the absence of exact scientific studies school administrators must be guided largely by the general principles derived from industrial establishments. These insure exact payment, the proper allocation of cost data, and the establishment of adequate accounting controls. Two problems peculiar to educational work merit the most careful attention—the employment and compensation of substitute teachers and the payment of teachers for periods of absence. These problems must be adequately solved if high professional standards and the proper morale are to prevail.

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CHAPTER NINE

OPERATION OF THE SCHOOL PLANT

THE term "operation of the school plant" implies those activities which are essential to keeping the physical plant in proper condition for pupils and teachers to do their work. It necessarily includes all types of cleaning, heating, and ventilating. But, in addition to these activities, the members of the operative staff are also responsible for minor repairs and for the proper policing of the school property both in and out of school hours. Because of the varied activities included here, this is by no means the least important aspect of the administration of a city's schools. In fact, next to teaching and supervision, it is probably the most important.

The janitorial engineering service in a school building is important because of (1) the dependence of health upon sanitation, (2) the influence of physical surroundings on the comfort of the children, (3) the effect of cleanliness and orderliness on the formation of children's habits, and (4) the necessity of caring for valuable school property. The employees responsible for this aspect of the work of the school must have as a prerequisite to their vocation a highly developed appreciation of the fundamental purpose of a school-house; namely, the proper education of the youth of the nation among comfortable, cheerful, sanitary surroundings. They must be alert, intelligent, efficient, and, above all else, possessed of a desire for self-improvement.

ADMINISTRATION OF JANITORIAL ENGINEERING SERVICE

An investigation conducted by Garber, published in 1922, throws much light on existing conditions in the administration of janitorial engineering service.¹ The most significant contribution of this report is the wide range of variability which it discloses. Though second only to the teaching function in

¹ John Absalom Garber, *The School Janitor* (Bulletin, 1922, No. 24, of the United States Bureau of Education), pages 7-26.

importance and a necessary auxiliary to it, the administrative aspects have failed to receive the attention that they merit.

Methods of appointment. Garber reports that in some cities the civil service system is used in the appointment of janitors and engineers; but generally the examination given consists of some oral questions, and the selection is largely determined by the recommendations which the applicant is able to produce. Few cities require a physical examination, although the importance of the position would seem to warrant such a proceeding.

Garber finds among 677 cities where the civil service system is not used that the superintendent of schools in 342 cities — more than 50 per cent — recommends the appointment of the janitor, while in 157 cities the board as a whole acts. In the remaining cities the janitors are recommended by various officers such as the business manager, the school principals, the committee on janitors, the clerk of the board, and others. The prevailing practice, however, seems to accord with sound administrative procedure — recommendation by the superintendent of schools.

Garber insists that the importance of the janitor's position "should be sufficient reason for requiring that in every case he pass an examination testing his fitness for the work he is required to perform."¹

This procedure is, without doubt, desirable in a large city where many persons may apply and where other considerations than merit may operate. In the small community, on the other hand, the more satisfactory method is to select the individual on the basis of facts which can be readily determined by the superintendent and his staff without the formality of a written examination. In any event, whatever method of selection is employed, it is imperative that a janitor be intelligent, alert, efficient, interested in his work, and

¹ *Op. cit.*, page 8.

anxious to improve his service. Assistant Superintendent Womrath of Minneapolis has suggested a probationary period during which the candidate may demonstrate his actual capacity for the work.

Compensation. No uniform practice prevails for determining the pay of janitors. Garber lists the following twenty-one practices which he found used in 573 cities:¹

TABLE 23
FACTORS USED IN DETERMINING THE COMPENSATION OF JANITORS

FACTORS	NUMBER OF CITIES
Size of building	179
Number of rooms	167
Size of building and grounds	30
Size of building and kind of heating apparatus	28
Floor area	19
Floor area, size of grounds, type of heating apparatus	13
Size of school	11
Size of building and grounds and kind of cleaning equipment	7
Floor and window area, size of grounds, kind of heating apparatus	6
Size, character, and condition of building	3
Number of rooms and amount of floor area	3
Union scale wage	3
Size of building, number of windows, and type of heating apparatus	1
Size of building, number of teachers and pupils, area of lots and walks	1
Floor area, paved area, and mechanical equipment	1
Cubic contents of building, glass area, yard, lawn, sidewalks	1
Number of rooms, number of trees, size of grounds, and kind of heating apparatus	1
Floor area and amount of coal consumed	1
Number of rooms, lineal feet of sidewalks, square yards of gymnasium	1
Number of rooms, number of fires kept, square feet of hall space, size of lawn and playgrounds	1
Salary arbitrarily fixed — same for all buildings	1
No established basis	95
Total	573

¹ *Op. cit.*, page 11.

He comments on the fact that almost one sixth of this large group of cities had "no established basis" on which the salaries of janitors were determined.

For the larger cities some plan which weights cleaning, heating, ventilating, care of grounds and sidewalks, and custodial service will probably constitute an equitable basis for perfecting a schedule of salaries for janitors. In the smaller cities, however, the salary will always be dependent on the amount of compensation required to command the services of an individual who will be able satisfactorily to perform the work required in a given school plant.

Assistant Superintendent Womrath says:¹

Any system for paying janitors is purely conjectural and often extremely prejudicial which is not based on a specific minimum rate with automatic increases based upon (a) length of service, (b) responsibility assumed, (c) demonstrated ability as indicated by class of engineer's license held, and (d) other factors of merit. The three most pernicious of the many systems in vogue for paying janitor-engineers are the so-called "room system," the "custodian system," and the "contract system."

All three of the above methods should be condemned. Differences in buildings render a "room system" untenable. The "custodian system" results in the custodian employing as cheap help as he can secure and deferring the performance of many tasks until it is convenient for him to do them himself. The "contract system" is absolutely pernicious because it is very difficult to fix responsibility and no employee can be expected to take any pride in his work.

Womrath outlines a "man-power" plan as the most equitable. "Man-power" he defines as 132,960 minutes per school year based on a forty-four-hour week with nine holidays. On the basis of a composite model building containing the most nearly ideal type of room of each kind, he determines the average time necessary to perform the work of the

¹ George F. Womrath, "Janitorial Engineering Service," *American School Board Journal*: Vol. 70, No. 5, page 41 (May, 1925).

janitorial engineering service. Each school building in the city is rated, using the model school as the criterion, and due allowance is made for every variation from the situation in the model building. For example, if the building is in a factory district and excessive window washing is necessary, additional allowance is made for that item. Again, if the floors are rough and require more cleaning than those of the model building, ample allowance is here made. The resultant rating gives the necessary total man-power expressed in minutes required for the work. The ratio of total man-power required to one man-power, or 132,960 minutes, indicates the number of employees necessary to handle the building. In the event of fractional results, the administration either assigns part-time men to the plant or old men who are practically pensioners.¹ This method is probably as good a device as has been developed, and it is distinctly superior to older plans still in operation. Probably its application is best suited to the school systems of large cities.

A few cities provide living quarters in the school building for the custodian and his family. If such quarters are comparable with those the custodian would select for himself, then the plan undoubtedly has merit. If, however, the janitor's family is relegated to dark, dismal, unsanitary basement rooms, then the plan cannot be too strongly condemned.

Rating and promotion. Garber found that, of 918 cities which reported the promotion of janitors, 667 — or more than two thirds — make promotions on merit; 30, on length of service; and 279 — or approximately one third — on both merit and length of service. In the majority of cases where merit was the controlling factor, the superintendent was responsible for making the recommendations of promotion.²

¹ George F. Womrath, "Janitorial Engineering Service," *American School Board Journal*: Vol. 70, No. 4, page 68 (April, 1925).

² *Op. cit.*, pages 15-16.

Efficiency ratings of an objective type are almost wholly lacking in school systems. This is probably due in part, at least, to the lack, until recently, of any thorough analysis of the work of a janitor. Where ratings are utilized, however, a scale should be devised which is based on an analysis of janitorial engineering service comparable with the rating scales used for members of the instruction staff. Accurate service records which include these ratings should be carefully kept and should be used when promotions are considered.

Tenure. Tenure seems to be for a year at a time. Garber found that 800 out of 1057 cities employed janitors for this period,¹ while Deffenbaugh found that of 958 cities 71.5 per cent employ janitors for the entire year of twelve months.² Every school system, however small, should have at least some of its janitors on duty the year round. The additional amount paid for salaries will be more than offset by other economies, for there is usually plenty of work for competent janitors in and around the buildings during the summer vacation. Tenure for a longer period can be defended only if there is a system in use by which it is possible to remove an incompetent employee without trouble.

Supervision. After examining the reports from 1065 cities, Garber concludes that in a great majority of cities any activity resembling supervision of the operative staff is non-existent.³ The work of the modern school janitor or engineer, however, is so complicated that some sort of supervision is desirable. In a large city this may be secured through a supervisor of janitors. In a small city employing only a small janitorial force, a head janitor with some technical training or a supervisor of buildings and grounds who has some technical training and who will make a study of the work

¹ *Op. cit.*, page 17.¹

² W. S. Deffenbaugh, *School Administration in the Smaller Cities* (Bulletin, 1915, No. 44, of the United States Bureau of Education), page 107.

³ *Op. cit.*, page 20.

of the operation staff would suffice. Instruction in approved methods of cleaning and in the economical use of fuel is imperative if efficiency and economy are to result. Not only are definite instructions needed, but constant checking to improve the work of individuals is imperative. Probably many of the arguments advanced for the supervision of instruction will apply with equal force to the operation staff, because the majority of janitors enter upon their work without specific training.

Assistants. Large buildings require the services of more than one janitor. It is customary in that case to designate one man as "head janitor" and to authorize the employment of assistants. In a majority of the cities studied by Garber the latter were employed by the janitors themselves, and in 40 per cent of the cities they were paid by the janitors who were in turn allowed a sufficient amount by the board to hire additional help.¹

This practice is open to several serious objections, as has already been noted. The janitor may employ inferior help over which the school authorities have no direct supervision; or he may economize by postponing certain tasks until he can handle them himself so as to employ as little of such help as possible. He thus effects a saving not to the district but to himself.

The solution of the problem is probably a scheme analogous to the organization of the instruction staff, whereby the teachers are assigned by the superintendent to a certain building but are directly responsible to the principal, who is in turn responsible to the administrative officials. The head janitor should undoubtedly be responsible under the principal for the operation of his building, and the assistants should in turn be responsible to him.

¹ *Op. cit.*, pages 18-19.

Training in service. Since practically all janitors come untrained to their school jobs, a factor of prime importance in developing a good janitorial staff is training in service. The large systems may develop schools which all janitorial engineering employees are required to attend a stated number of hours per week. The experts employed in the janitorial engineering school may visit the janitors and engineers at their jobs as one part of the follow-up work. The Minneapolis schools have adopted such a plan. The members of the extension faculty of Iowa State College have successfully conducted night schools for such training in small cities of the state. For rural sections having only village and consolidated schools Garber suggests a county institute presided over by a county superintendent of schools or a county supervisor of janitors.¹

A school conducted by the Colorado State Teachers College at Greeley for one week is typical of the sort of training that is now furnished by many schools. The following outline indicates the general scope of the work done.² Work was scheduled for each day from eight o'clock in the morning until five o'clock in the afternoon.

Demonstrations of :

- Firing
- Control of heat
- Tempering air, humidifying air, etc.
- Scrubbing
- Mopping
- Oiling floors
- Washing windows
- Cleaning erasers and blackboards
- Cleaning toilets
- Building and banking fires
- Reading gauges

¹ *Op. cit.*, page 41.

² *Colorado State Teachers College Bulletin*, Series XXV, No. 4, page 7.
(State Teachers College, Greeley, Colorado.)

- Making records and reports
- Making repairs and doing odd jobs
- Lectures giving standards and methods for these
- Lectures on :
 - Importance of the janitor's work
 - Responsibilities of the janitor
 - Lines of authority — board through superintendent and principal to janitor
 - A janitor's duties
 - Precautions against fire
 - Precautions against other accidents
 - Sanitation
 - Disinfection
 - Relationships with teaching personnel
 - Relationships with pupils
 - Care of grounds
 - Materials for use in cleaning and preserving
- Visits to ten schoolhouses of different types to observe how janitors' duties should be performed under different conditions.
- Exhibits. Leading commercial houses will have on exhibit a full line of janitorial materials and supplies. (These are only for examination by the janitors. There will be no selling by representatives of these firms.) Uses of various materials and supplies will be explained.
- Questions and answers. All members of the school are constantly urged to ask questions. (Discussion resulting from janitors' questions was one of the best features of last year's school.)
- Moving pictures. These include pictures of methods of fire prevention, handling of furniture, temperature control, cleaning, etc.
- To take home to janitors who remained behind — mimeographed summaries of lectures given in some of the classes.

ANALYSES OF JANITORIAL SERVICE

In industry it has been necessary to analyze the component parts of various jobs to determine just what they include. Extensive use has been made of the stop watch and the cinematograph in making the so-called time and motion studies. In that way complex activities have been reduced

to their fundamental motions. Such studies are necessary in many of the processes connected with the schools.

Two analyses of janitorial service are given here — the first, based on observation of employees at work; and the second, the result of an empirical analysis. Both are of value in planning and executing this type of work.

Reeves' analysis of janitorial service. After a study of the rules and regulations of ninety cities located in different parts of the country, supplemented by an analysis of the work of forty-five janitors in eighteen elementary schools in the vicinity of New York City, Dr. Charles E. Reeves drew up the outline of cleaning jobs which is reproduced here.¹ This analysis indicates not only what boards of education and administrators conceive to be the duties actually performed in a number of elementary school buildings, but also the activities actually performed by janitors. Cleaning jobs include the following:

1. Sweeping
 - a. Classrooms
 - b. Corridors and stairs
 - c. Special rooms
2. Dusting
 - a. Classrooms
 - b. Woodwork
 - c. Walls and ceilings
 - d. Pictures and window shades
 - e. Under radiators
3. Oiling
 - a. Classrooms and special rooms
 - b. Corridors and stairs
 - c. Woodwork and furniture
4. Scrubbing, mopping, and washing
 - a. Classrooms and special rooms
 - b. Corridors and stairs

¹ Charles E. Reeves, *An Analysis of Janitor Service in Elementary Schools*, pages 19–27. (Teachers College, Columbia University, New York; 1925. Used by permission.)

- c. Kindergartens and domestic-science rooms
 - d. Woodwork and furniture
- 5. Washing glass
 - a. Windows, outside
 - b. Windows, inside
 - c. Glass in doors
 - d. Transoms, cupboard doors, cases, mirrors, fixtures
- 6. Toilet cleaning
 - a. Scrubbing, mopping, or flushing floors
 - b. Cleaning urinals, toilet bowls, and seats
 - c. Sweeping toilet floors
 - d. Disinfecting toilets
- 7. Chalk-dust cleaning
 - a. Blackboards
 - b. Eraser cleaning
 - c. Cleaning chalk trays
- 8. Miscellaneous cleaning
 - a. Inkwells
 - b. Porcelain pieces (washbowls, drinking fountains, etc.)
 - c. Polishing metal fixtures
 - d. Basements (play courts, gymnasiums, furnace rooms, fresh-air intakes, etc.)
 - e. Cleaning carpets, rugs, and doormats
 - f. Cleaning glazed bricks
 - g. Removing ink stains and chewing gum
 - h. Removing chalk and pencil marks
 - i. Disinfecting (buildings, furniture, hand rails, and door knobs)
 - j. Removing sawdust and shavings (manual-training rooms)
 - k. Removing garbage (domestic-science rooms)
 - l. Disposing of waste paper, sweepings, etc.
 - m. General cleaning.

Van Oot's analysis of janitor service. Van Oot makes an analysis of the school janitor's job from a slightly different point of view.¹ He designates thirteen "contact points," indicating under each the information required, appreciations needed, and abilities desired. The thirteen points of Van Oot's analysis of a school janitor's job are as follows:

¹ B. H. Van Oot, "An Analysis of the School Janitor's Job," *American School Board Journal*: Vol. 66, No. 5, page 55 (May, 1923).

1. Contact points of a general nature
2. Classrooms, offices, halls, basement, etc.
3. Boiler room
4. Toilets, water supply, and drainage
5. Territory surrounding building
6. Errands
7. Carpentry work a janitor may do
8. The plumbing work a janitor may do
9. The electrical work a janitor may do
10. The painting and glazing work a janitor may do
11. Masonry work a janitor may do
12. Gardening a janitor may do
13. Tinsmithing a janitor may do

This list of duties suggests that janitorial work, if it is effectively performed, will require a man with experience in many sorts of work. His job includes many activities other than those pertaining to cleaning alone. A well-trained, skillful individual is needed. If well trained, he is an asset to the school district, for he will economize in many ways for the school board and the community.

STANDARDS OF EFFICIENCY IN JANITORIAL ENGINEERING SERVICE

To describe the special techniques that have been developed in connection with the work of janitors and engineers is beyond the scope of the present discussion. The application of industrial methods to the activities involved in the operation of the school plant has resulted in the improvement of much of the work, but for specific details regarding these methods and their application to schools the reader should consult the references in the annotated bibliography appended to this chapter and the monumental work by Charles E. Reeves and Harry S. Ganders.¹

Cleaning. Reeves has made a series of time and motion studies in connection with the work of school custodians

¹ Charles E. Reeves and Harry S. Ganders, *School Building Management*. (Teachers College, Columbia University, New York; 1928.)

which has resulted in the determination of superior methods of cleaning floors, walls, and ceilings; sweeping stairs and corridors; scrubbing and mopping and oiling floors; dusting furniture; caring for toilets; cleaning windows; polishing woodwork; and other miscellaneous jobs. Such controlled experiments mark a distinct advance in this field. They imply the necessity of systematic training in service and careful supervision so that the best results may be secured with least effort.

Making repairs. Some cities hold that janitorial service is highly specialized and does not, therefore, include the making of minor repairs. Other cities insist that many small repair jobs can be handled by the members of the custodial staff. Janitors, they argue, should be "all-round handy men," capable of handling any minor repairs.

No investigation has yet revealed which of these two points of view predominates, but it is probable that a great advantage accrues to the school district which encourages the janitors' handling such repair work. Not only is money actually saved, but the numerous small things insignificant to all but the members of the teaching staff — but tremendously important to them in cumulative effect — are handled promptly and in the main effectively.

This whole question is considered so important by a certain city that reports on this sort of work done by the janitorial staff together with an estimate of the money value of such work are made at stated periods to the board. Each janitor in the system strives to have his name reported to the board each time. Needless to say, the school buildings in that city are kept in a most commendable fashion.

Heating and ventilating. The comfort and physical welfare of the teachers and pupils depend, in large measure, on the heating and ventilating of the schoolhouse. If the proper temperature is to be maintained, if fresh air is to be

adequately circulated, if the required percentage of relative humidity is to be maintained, then the janitor or engineer must be more than a mere mechanical worker. He must be a skilled technician who knows the essential details of his task and who understands the reasons for such details. Here again one cannot stress too strongly the necessity of adequate training in service. Modern school heating and ventilating plants are vast machines delicately adjusted to control temperature, air changes, volume, and humidity. To be complete master of this equipment a man must know not alone the technique of handling the machinery but the scientific laws for its operation. Such knowledge is gained slowly from experience; in order to reduce to a minimum the loss of the trial-and-error method there must be specific instruction.

Fuel conservation. Fuel and labor constitute the two largest items in the operative division of the school budget which, in turn, constitutes from 8.3 to 11.8 per cent of the total amount of current expense in the typical American city. To secure the best service from a heating plant and to save money, the man responsible for firing the boiler must know the best method of doing that work.

These methods are not alike for all types of fuel. Rice anthracite, for example, requires an entirely different technique of handling from the ordinary commercial sizes of anthracite. A down-draft boiler with water grates requires different management from the boiler equipped with ordinary grates. Steam coal will not yield satisfactory results if handled precisely like mine-run coal.

The man responsible for the efficient operation of the heating plant should know the best methods of handling the fuel used so that satisfactory results may be secured with the least outlay. Here again specific instruction is superior to the trial-and-error method commonly used.

Measuring janitorial engineering service. In so varied and complicated a type of service as that performed by janitors and engineers, it is imperative that school administrators not only have standards but objective methods of comparing the service of janitors and engineers with these standards. Engelhardt, Reeves, and Womrath have devised an adequate set of such standards.¹ They have also devised a score card which is divided into sixteen major headings, viz.: administration, personnel, building facilities, amount of work required, daily cleaning of floors, dusting, scrubbing, and mopping, oiling of floors, cleaning and polishing of woodwork and furniture, washing glass, toilet cleaning, blackboard cleaning, eraser cleaning, other cleaning, heating and ventilating, and special work.² The score card may be used by a superintendent of schools, the superintendent of buildings and grounds, a principal, or a survey staff to study objectively and analytically the adequacy of the service given in a school building or a school system. Weaknesses will be revealed which may be corrected, and the strong points of the service will be uncovered.

CONCLUSION

Perhaps no more fitting conclusion can be given this chapter, discussing as it does the service second in importance to instruction alone, than Dr. Reeves gives in his book in which he emphasizes above all else the human side of the janitor's work: ³

Everybody appreciates a good-natured janitor. No other kind should be tolerated in a school system. But there is a distinct tendency of pupils, teachers, and administrative officers to impose upon

¹ N. L. Engelhardt, C. E. Reeves, and George F. Womrath, *Standards for Public School Janitorial Engineering Service*. (Teachers College, Columbia University, New York; 1926.)

² *Score Card for Public School Janitorial Engineering Service*.

³ C. E. Reeves, *An Analysis of Janitor Service in Elementary Schools*, page 181. (Teachers College, Columbia University, New York; 1925. Used by permission.)

the good nature of janitors. The janitor's work is responsible and a man-sized job, and there is no more reason for making him, any more than any other school official, a general flunky to wait on everybody in the school system. What his work is and of what it should consist should be recognized, and the limits of his proper duties should be fully respected. The efficient performance of his duties should be appreciated by the entire school, teachers, pupils, and administrative officials alike. The janitor is human and if his work is properly respected and its faithful performance appreciated by all, he will react to maintain such respect and appreciation and the fruits of his service will be multiplied.

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BRUCE, WILLIAM G. "A Janitor's Salary Schedule," *American School Board Journal*: Vol. 69, No. 2, page 112 (August, 1924).

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— "Recommendations on Janitorial Service," *American School Board Journal*: Vol. 71, No. 6, page 59 (December, 1925).

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Chapter XI analyzes the duties of the school janitor from the point of view of the building principal.

DEFFENBAUGH, WALTER S. *School Administration in the Smaller Cities* (Bulletin, 1915, No. 44, of the United States Bureau of Education), pages 94-96, and 107. Government Printing Office, Washington.

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DRESSLAR, FLETCHER B. *School Hygiene*. The Macmillan Company, New York; 1913.

Chapters XXIV and XXV outline the qualifications of janitors and describe the processes involved in cleaning schoolhouses.

ENGELHARDT, N. L. and FRED. *Public School Business Administration*. Teachers College, Columbia University, New York; 1927.

Chapter XVI discusses janitorial service in connection with property management.

ENGELHARDT, N. L.; REEVES, C. E.; and WOMRATH, GEORGE F. *Score Card and Standards for Public School Janitorial Engineering Service*. Teachers College, Columbia University, New York; 1926.

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FROST, W. D. "Our Short Course for Janitors," *Proceedings of the National Education Association, 1911*, pages 990-992. National Education Association, Washington.

Describes a short course for janitors covering several topics.

— and ARMSTRONG, VERMILLION A. "Bacteriological Tests of Various Methods of Cleaning," *Proceedings of the National Education Association, 1911*, pages 985-990. National Education Association, Washington.

Describes the results of bacteriological tests applied to different methods of cleaning.

GARBER, JOHN ABSALOM. *The School Janitor — A Study of the Functions and Administration of School Janitor Service* (Bulletin, 1922, No. 24, of

the United States Bureau of Education). Government Printing Office, Washington.

A thorough investigation of school janitorial service in cities of twenty-five hundred and over. Contains a bibliography.

HALL, LEOTI. "A Janitor's Contract," *American School Board Journal*: Vol. 66, No. 6, page 50 (June, 1923).

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HALLETT, E. S. "Storage of Coal in Schools without Danger of Spontaneous Combustion," *American School Board Journal*: Vol. 58, No. 6, page 48 (June, 1919).

Describes method of storing coal in one large city so as to prevent spontaneous combustion.

— "The Training of Janitors and Custodians," *Journal of the American Society of Heating and Ventilating Engineers*: Vol. 26, pages 357-362 (April, 1920).

Describes the training in service of St. Louis school janitors and outlines topics used in such work.

HOAG, E. B., and TERMAN, L. M. *Health Work in the Schools*. Houghton Mifflin Company, Boston; 1914.

Chapter XIII has a good general discussion of "school housekeeping."

HOLMES, WILLIAM H. "Better Custodial Service for Schools," *American School Board Journal*: Vol. 70, No. 6, page 119 (June, 1925).

Emphasizes the duty of the administration to train janitors in proper methods of cleaning.

MILLIGAN, R. M. "The Public School Janitor and the Janitorial Staff," *American School Board Journal*: Vol. 60, No. 3, page 41 (March, 1920).

Describes the method of handling janitorial problems in St. Louis, Missouri.

— "Who Bosses the School Janitors?" *American School Board Journal*: Vol. 61, No. 4, page 32 (October, 1920).

Implies that the proper training of janitor removes necessity of any "boss."

REEDER, WARD G. *The Business Administration of a School System*. Ginn & Co., Boston; 1929.

Chapter XIII treats of the operation of the school plant, major emphasis being placed on the school janitor, his qualifications and activities.

REEVES, CHARLES E. *An Analysis of Janitor Service in Elementary Schools* (*Contributions to Education*, No. 167). Teachers College, Columbia University, New York; 1925. Also in *American School Board Journal*: Vol. 70, No. 6, page 48 (June, 1925); Vol. 71: No. 1, page 48 (July, 1925), No. 2, page 47 (August, 1925), No. 3, page 51 (September, 1925), No. 4, page 65 (October, 1925), No. 5, page 55 (November, 1925), and No. 6, page 55 (December, 1925); Vol. 72: No. 3, page 65 (March, 1926), No. 4, page 59 (April, 1926).

Describes the results of time and motion studies covering practically every phase of janitor work. It is a thoroughly scientific piece of work, and contains a bibliography.

REEVES, CHARLES E., and GANDERS, HARRY S. *School Building Management*. Teachers College, Columbia University, New York; 1928.

Treats exhaustively janitorial engineering service together with the management of school buildings, their proper cleaning, heating, and ventilating. Bibliography.

RICHARDSON, ROBERT E. "The Selection and Supervision of Janitors," *American School Board Journal*: Vol. 56, No. 5, page 28 (May, 1918).

Describes the selection of janitors in Reading, Pennsylvania, and their subsequent training in service.

SMITH, KENNETH G. *Short Course for Janitor-Engineers*. Bruce Publishing Company, Milwaukee, Wisconsin; 1919.

This is an excellent treatise, setting forth information which should be in the possession of school janitors and engineers.

VAN OOT, B. H. "An Analysis of the School Janitor's Job," *American School Board Journal*: Vol. 66, No. 5, page 55 (May, 1923).

Contains a complete analysis of the school janitor's job.

WILSON, G. M. "The Standardization of Janitor Service," *Proceedings of the National Education Association, 1917*, pages 462-467. National Education Association, Washington. Also in *American School Board Journal*: Vol. 44, No. 5, page 17 (May, 1912).

Urges standardization of janitor service through training.

WOMRATH, GEORGE F. "The Janitor-Engineer Problem," *American School Board Journal*: Vol. 65, No. 6, page 37 (December, 1922).

Shows the need for special training, which is suggested.

— "Janitorial Engineering Service," *American School Board Journal*: Vol. 69, No. 6, page 38 (December, 1924); Vol. 70: No. 2, page 54 (February, 1925), No. 3, page 45 (March, 1925), No. 4, page 68 (April, 1925), No. 5, page 41 (May, 1925), No. 6, page 47 (June, 1925); Vol. 71: No. 1, page 52 (July, 1925), No. 2, page 68 (August, 1925), and No. 4, page 116 (October, 1925).

A series of articles giving comprehensive data on administration of janitor service, followed by a detailed treatment of equipment and techniques used by janitors.

CHAPTER TEN

MAINTENANCE OF THE SCHOOL PLANT

MAINTENANCE is that phase of school administration that is concerned with keeping the physical plant available without interruption for educational service when schools are in session. It is also concerned with the depreciation of the school plant, and the corresponding upkeep, repair, and replacement of its parts. It includes both the current repairs and the annual or summer repairs. It must provide for such custodial and inspectional service as to anticipate defects and correct them before they become a menace to the efficiency of the school system and a source of needless expense. This phase of administration is concerned not only with providing the workmen to do the repair jobs, but with setting up a system of handling the necessary men and materials in an efficient and businesslike manner.

DEPRECIATION OF THE SCHOOL PLANT

A consideration of the maintenance of the school plant involves the factor of depreciation and the policy adopted by a board to cope with this factor. All buildings depreciate — some rapidly and some slowly. Every owner, therefore, faces the necessity of retarding certain types of depreciation as much as possible by keeping the plant in repair.

The evolution of an attitude of recognition of the factor of depreciation as regards school buildings has hardly begun. This is due to the fact that the public, having provided plant facilities, proceeds to forget the necessity of adequate upkeep and the replacement of obsolete and worn-out parts. In the realm of business, however, we can discern three very distinct stages in the development of such an attitude. Depreciation first appeared in industry as an improper charge, then a legitimate one, and now it is regarded as a necessary one.

Montgomery bears witness to the increasing recognition of the factor of depreciation in business :

Railway operators have reluctantly come to admit the necessity for taking account of depreciation, until at the present time practically all engineers of high standing consider it as an operating expense. It is a satisfaction to realize that the correctness of a principle for which at one time almost no one but accountants contended has at last been recognized.¹

Every well-managed corporation, before ascertaining profits and declaring dividends, sets aside some portion of its revenue to provide for extraordinary replacements that are not properly charged to the operating expense of a single year.²

Why is the factor of depreciation computed? Information regarding the value of the building is desired at points or periods intermediate between the date of acquisition and the time of discard. Depreciation must be considered, therefore, because a statement of financial condition is needed at regular stages. The recently enacted income-tax law makes it necessary for business men to study the depreciation question carefully in order to report intelligently to the government.

Causes of depreciation. The causes of depreciation, as adapted from Kester, are summarized in the following outline: ³

I. Physical Causes

- a. Wear and tear from operation
- b. Decrepitude — that is, action of time and the elements

II. Functional Causes

- a. Inadequacy or supersession
- b. Obsolescence

¹ Robert H. Montgomery, *Auditing Theory and Practice*, Vol. II, page 351. (Ronald Press Company, New York; 1922.)

² *Op. cit.*, page 296.

³ Adapted from Roy B. Kester, *Depreciation*, page 17. (Ronald Press Company, New York; 1924.)

III. Contingent Causes

- a. Negligence
- b. Unusual action of the elements
 - (1) Wind
 - (2) Water
 - (3) Temperature
 - (4) Lightning
- c. Structural defects
- d. Accidents
 - (1) Fire
 - (2) Others

Physical causes. "Wear and tear from operation," the first of the physical causes listed, comprises deterioration that is the result of the educational use of the building. This begins as soon as a building is occupied. The floors become worn, the walls are scratched and marred, and the equipment shows damage. But the rate may vary widely within a given building and among school buildings. Some parts of a plant may decline in value rapidly at first and then more slowly as time passes, while other parts show the cumulative effect of depreciation more and more as the service life of the plant draws to a close. Repairs and renewals retard this sort of depreciation to a marked degree; hence, it is necessary to adopt and continue a maintenance policy.

The term "decrepitude" applies to the decay that is inevitable as a result of the passing of time and the normal action of the elements. This general deterioration cannot be wholly avoided even by the best maintenance policy. It is constantly going on and full compensation for it can never be made. But it can be retarded materially. Such decay is seen in the gradual deterioration of roof, boilers, radiation, foundation, walls, and exterior woodwork. Such a stage of decrepitude will ultimately be reached that replacement is imperative. During the later part of the life of a building

an inordinate amount may be spent on repairs without arresting its decay materially.

Functional causes. The terms "inadequacy" or "supersession" suggest changes in enrollment of pupils in a school system. A school building may become uneconomical or useless because of the increase of school population; the school enrollment outgrows the plant. Again, population may shift until the building no longer serves it properly. This not infrequently happens through the encroachment of the business section of a city on the residential section.

"Obsolescence" involves such changes as the introduction of new methods of teaching, extensions of the course of study, new types of equipment, and enlargement of the educational service offered. Such changes may render a building obsolete. For example, the old box type of structure with its large halls and with its nest of classrooms is practically worthless today for an elementary school in which a modern course of study is given; nor can a modern junior high school program be housed in an old grammar school building. The terms "inadequacy" and "obsolescence" may seem to be interchangeable — the one being used for the other at times. But inadequacy does not imply that a building may not have value for school purposes, whereas obsolescence means that the building is worthless, or practically so, from an educational point of view.

Contingent causes. Depreciation due to negligence is measured by the difference between a building properly maintained and one that is neglected. Not infrequently a board of education or a city council may neglect to make the proper repairs on a school building for several years. Such neglect results in more rapid depreciation than would otherwise occur. Of course, in time, even though repairs are made constantly, a building will depreciate to a point where the structure cannot be restored to its original value. This fact enables one to

determine when it is no longer justifiable to expend more money on the rejuvenation of a plant.

The unusual action of wind, water, and temperature may result in a plant's rapid deterioration. A building may lie in a low portion of the city where a flood occurs occasionally; an unusual wind may damage a school building; or hail or lightning may harm exposed portions that are susceptible to such damage.

Certain structural defects may not be apparent when the building is accepted by the board but may show up in time. A roof may be inadequately supported, requiring extensive repairs; the footings may have been placed on soil or rock not having the requisite bearing qualities; a poor grade of cement may have been used; a reinforced concrete beam may have been permitted to dry and harden too rapidly. All these defects increase the rate of deterioration and require the attention of the repair gangs long before it should be needed.

Fire, gas explosions, boiler explosions, earthquakes, and other accidents may cause a rapid depreciation of a school building or compel its early replacement. Some of these disasters are unavoidable but constitute, notwithstanding that fact, a fruitful source of depreciation.

Current attitude toward depreciation. In considering depreciation only two factors are commonly included: (1) depreciation which embraces wear and tear, decrepitude, and neglect; and (2) depreciation which includes inadequacy and obsolescence. Whether or not a school building is obsolescent is largely a matter of judgment. At present we have no device for measuring any of the factors of depreciation in ways that will enable us to determine how much money to set aside each year to cover maintenance costs.

Large railway systems, telephone and telegraph corporations, steel industries, department stores, and scores of other business enterprises have for many years figured depreciation

along with their other operating costs. In the field of education, however, this factor has been almost totally neglected. Educators and boards of education have been so busy improving instruction, revising the curriculum, and adopting programs of education that they have been little concerned with the factor of the depreciation of the physical plant. They are unaware, apparently, that repairs and renewals do not bring the plant back to its original value but merely keep it from becoming even less valuable, and that no building, however good, can last forever.

Educational costs and depreciation. Plant costs are usually neglected in studies of educational finance. Current expenses are almost universally considered as the cost of education for a given year. In a small city, if a new building is paid for by a current levy, or a large amount of bonds are returned in one year, the capital outlay could easily be in excess of the accrued economic charge — money's worth used up — or vice versa. If the average annual depreciation were known for school buildings of the different types, then the annual accrued economic charge could easily be found. This would enable us to obtain comparable data on school costs, including the physical plant. Such data are needed in making comparisons between cities as well as in contrasting costs of different administrations in the same city.

Methods of computing depreciation. Many methods of reckoning depreciation have been devised: some good, some bad, and some too theoretical and involved ever to serve the practical needs of school men. There are several ways in which the depreciation calculation can be made. These may be classified broadly, though with some overlapping, under three heads: (1) proportional methods, (2) uniformly-diminishing-amounts methods, and (3) compound-interest methods.

It is likely that there will never be devised a technique of

estimating depreciation which will be applicable under all conditions and to all localities. A method that gives good results in one case may not be equally useful in another. In discussing the relative merits of the various methods, therefore, no dogmatic rules for their use can be laid down. Furthermore, without a detailed knowledge of operating conditions, only the main points of strength and weakness of the different methods will be meaningful; this is all that will be attempted here.

Regardless of the actual progress of depreciation, the method of distributing the charge that is theoretically ideal from the standpoint of the school system is to make each unit of output bear its just proportion of the burden. Any other method is inconsistent. Thus, assuming that actual depreciation does not take place uniformly but is, as some maintain, heaviest towards the end of the service life of the building, it would not be equitable to charge to the school costs of those years a much higher burden for the use of the buildings than had been borne in earlier years. The life of a building must be viewed as a whole, and its total depreciation should be distributed evenly over the entire period. This principle applies not only to the depreciation charge but equally to all other charges in connection with the building such as repairs and maintenance. Although it is not the best accounting practice to include these other costs under depreciation, the more important consideration is to procure an equitable distribution of all of them to each unit of time the building is in useful service. Therefore, any method of distributing the depreciation cost must take cognizance of the other costs as well.

Proportional or straight-line method. The straight-line method, so-called because its graphical representation is a straight line, is perhaps the simplest of all methods for calculating the periodic depreciation charge and is, therefore, the most widely used. Under it the loss of value for each period

is proportional to the length of service life. Thus a Type C¹ school building whose service life is reckoned as seventy-five years will have depreciated one seventy-fifth by the end of the first year, two seventy-fifths by the end of the second year, and so on. The depreciation for each year is the same.²

¹ Here "type" refers to the classification made by the American Institute of Architects. This organization has grouped buildings under five types as follows:

- Type A: A building constructed entirely of fire-resistive materials, including its roof, windows, doors, floors, and interior trim.
- Type B: A building of fire-resistive construction in its walls, floors, stairways, and ceilings, but with wood finish, wood or composition floor surface, and wood roof construction over fire-resistive ceiling.
- Type C: A building with masonry walls, fire-resistive corridors and stairways, but with ordinary construction otherwise.
- Type D: A building with masonry walls but otherwise ordinary or joist construction and interior wood trim.
- Type E: A frame building constructed with wood above foundation, with or without slate or other semi-fireproof material on roof.

² In this and the succeeding illustrations of methods of computing depreciation the following symbols will be used:

- V = original cost
- V_1 = depreciated value at end of first period
- V_2 = depreciated value at end of second period
- V_n = depreciated value at end of last period; i.e., scrap value
- N = length of service life
- d = rate of depreciation per period
- D = total amount of depreciation; that is, $V - V_n$
- D_1 = amount of depreciation to the end of the first period
- D_2 = amount of depreciation to the end of the second period
- r = rate of interest
- R = 100 per cent + rate of interest; that is, $1 + r$
- $1 - r$ = 100 per cent - rate of interest
- A = annual amount to be paid under compound-interest methods

Assuming no scrap value, the formula for computation of depreciation to the end of the first year would be

$$D_1 = \frac{V}{N};$$

To the end of the second year

$$D_2 = 2 \frac{V}{N}; \text{ etc.}$$

Table 24 gives book values and depreciation charges at the end of certain periods in the life of a Type C building costing \$18,000 with a scrap value of \$3000 at the end of seventy-five years. This method is simple in application and can be

TABLE 24

BOOK VALUES AND DEPRECIATION CHARGES FOR A TYPE C BUILDING

AGE IN YEARS	BOOK VALUE AT END OF YEAR	DEPRECIATION CHARGES AT THE END OF THE YEAR	TOTAL ACCUMULA- TION OF DEPRECIA- TION CHARGES
Zero	\$18,000		
Ten	16,000	\$200	\$ 2,000
Twenty	14,000	200	4,000
Thirty	12,000	200	6,000
Forty	10,000	200	8,000
Fifty	8,000	200	10,000
Sixty	6,000	200	12,000
Seventy-five . . .	3,000	200	15,000

very easily adapted to any school building or any school system. Because of the ease of calculation and application it is used quite generally by accountants and has been designated as an official method by many regulatory boards. It spreads the charge evenly over the service life of the building and should give satisfactory results for allocating the real charge for depreciation.

Its effect must also be considered, however, in conjunction with the distribution of the other costs, such as repairs and maintenance. Many engineers maintain that these other costs are light during the early years of the building and heavy during the later years. Thus the combined depreciation and upkeep costs place an unjustly heavy burden upon the later years if the just-mentioned contention is true. Other engineers maintain that the cost of repairs is in no sense equally graduated, but extremely irregular in practice. If this is true,

we should have some years carrying too heavy a burden and others too light a load.

These considerations must be given weight when a single building is considered; but in a large city system with a number of school buildings a normal and fairly regular cost of upkeep has become established. Thus the inequalities of individual charges may merge into more nearly uniform charges for the upkeep of the system as a whole.

Assuming that depreciation costs can be predetermined with a satisfactory degree of accuracy — and an estimate is all that can ever be made — repair and maintenance costs can be predetermined with equal accuracy and satisfaction. Equal reason exists for predetermination in these cases; namely, the securing of an equitable distribution of costs. One is no more difficult than the other. With both estimates made at the beginning of the service life of the building all costs in connection with the building can therefore be pro-rated over the probable years of its service.

Uniformly-diminishing-amounts method. This method estimates the periodic depreciation of a fixed percentage of the appraised or book value of the building as at the time of the last appraisal. Thus, if the building cost \$10,000 and the fixed rate is $1\frac{1}{3}$ per cent, the first depreciation estimate is \$133.33 — $1\frac{1}{3}$ per cent of \$10,000 — which gives an appraised value of \$9866.67; the second depreciation estimate is \$131.55 — $1\frac{1}{3}$ per cent of \$9866.67 — with a new appraised value of \$9735.12; the third estimate is \$129.80 — $1\frac{1}{3}$ per cent of \$9735.12 — with an appraisal of \$9605.32 for the building; and so on. It is evident that a final zero valuation can never be reached since no matter how old the building becomes there will be no year in which the depreciation will be more than $1\frac{1}{3}$ per cent of the appraised value at the beginning of the year. If, however, there is any scrap value, a depreciation rate may be determined such that the ap-

praised value at the end of the estimated life of the building will equal approximately the scrap value. If there is any scrap value, the series becomes determinate. From the standpoint of calculation, the problem here is the determination of the fixed rate necessary to reduce the value of the building to residual or scrap value in the given life term, which is seventy-five years for a Type C building.¹

The chief merit of this method is its automatic adjustment to maintenance charges. The yearly depreciation charges are heavy during the early years and less as the building grows

¹ Using the symbols given in footnote 2 on page 224, we may formulate the following equations:

$$\begin{aligned} V_1 &= V(1 - d) \\ V_2 &= V_1(1 - d) = V(1 - d)(1 - d) \\ V_n &= V(1 - d)^n \end{aligned}$$

Solving for $(1 - d)$, we have

$$1 - d = \sqrt[n]{\frac{V_n}{V}}$$

Solving for d , we get

$$d = 1 - \sqrt[n]{\frac{V_n}{V}} \text{ or } 1 - \sqrt[n]{\frac{\text{Scrap value}}{\text{Cost}}}$$

By means of this formula and the use of logarithms the depreciation rate for the building described on page 225 is readily found to be, approximately to four decimal places, .0236.

But the value at the end of any number of years is found by substituting in the equation

$$V_n = V(1 - d)^n$$

The value at the end of 10 years is

$$V_{10} = \$18,000(0.9764)^{10}$$

Solving by logarithms,

$$V_{10} = \$14,180$$

Likewise

$$\begin{aligned} V_{20} &= \$11,180 \\ V_{50} &= \$5460, \text{ and} \\ V_{75} &= \$3000, \text{ which is the scrap value} \end{aligned}$$

As a check on the computation, we find V_{75} to be \$3001.63, which differs from the given scrap value by less than \$2.00.

The depreciation in each case is the difference between the cost and the value at the end of the period.

older; whereas the maintenance charges are light during the early years, but increase gradually with the age of the structure. The two costs are thus equalized. This method estimates the depreciation charge by periods. It involves a complex calculation and is perhaps never applied with any degree of accuracy.

Compound-interest method. The compound-interest method differs radically from the preceding ones in that it uses the principle of compound interest to determine the amount of periodic depreciation. The problem under the compound-interest method is the calculation of the amount of a sum of money which, placed at compound interest, at the end of successive periods will accumulate to the amount of the total depreciation of the building during its life term. At the end of each period this amount, plus any accumulated interest on the amounts previously set aside, becomes the depreciation estimate for this period. Unless a fund is actually established, there can, of course, be no accumulation of interest. Under this method the amount of such theoretically accumulated interest is, nevertheless, made a part of the periodic depreciation charge. The method thus becomes simply a mathematical device for making the estimate.¹ For the Type C building used heretofore with a full valuation at the beginning of its life of \$18,000 and a scrap value of \$3000 after a service life of seventy-five years, this periodic depreciation is \$19.82, if interest is reckoned at 6 per cent. If these figures are used, the appraisal schedule given in Table 25 may be set up:

¹ Using the symbols given in the footnote on page 224, the calculation of the fixed periodic amount is in accordance with the following formula:

$$\begin{aligned} A &= \frac{(V - V_n)r}{R^{n-1}} \\ &= \frac{(\text{Cost} - \text{Scrap value})r}{R^{n-1}} \\ &= \frac{Dr}{R^{n-1}} \end{aligned}$$

TABLE 25

APPRAISAL SCHEDULE FOR A TYPE C BUILDING OF A CERTAIN SORT

AGE IN YEARS	PERIODIC AMOUNT	ACCUMULATED INTEREST	DEPRECIATED OR APPRAISAL VALUE	TOTAL ACCUMULATED DEPRECIATION
Ten	\$19.82	\$ 63.56	\$17,738.24	\$ 261.76
Twenty . . .	19.82	291.73	17,311.87	688.13
Thirty . . .	19.82	788.06	16,617.34	1,382.66
Forty . . .	19.82	1,721.17	15,486.03	2,513.97
Fifty . . .	19.82	3,365.73	13,643.27	4,356.73
Sixty . . .	19.82	5,907.45	10,903.35	7,096.65
Seventy-five .	19.82	13,513.50	3,000.00	15,000.00

The chief charm in the compound-interest method is in the apparent magic with which a small sum of money seems to grow into a sizable amount and by the end of the building's service life takes care of the loss in value. In this respect it is to be preferred to any haphazard or arbitrary method. That it secures an equitable distribution of depreciation costs for the various periods is open to serious question. The periodic charge probably bears no relation to the fact of depreciation. In public service companies where actual funds must be set aside to accumulate at compound interest, there is no serious objection to the method. Judged from the standpoint of its relation to upkeep costs, the method lays an increasingly heavy burden on the later years of the life of the building.

Figure 14 shows graphically the three methods of computing depreciation.

Method used by Strayer and Haig. Strayer and Haig in their studies of financing of education made the pioneer attempt to calculate the cost of education, taking into consideration imputed interest and plant depreciation. Their method is shown in the following quotation:¹

¹ George D. Strayer and Robert M. Haig, *The Financing of Education in the State of New York*, pages 82-85. (The Macmillan Company, New York; 1923.)

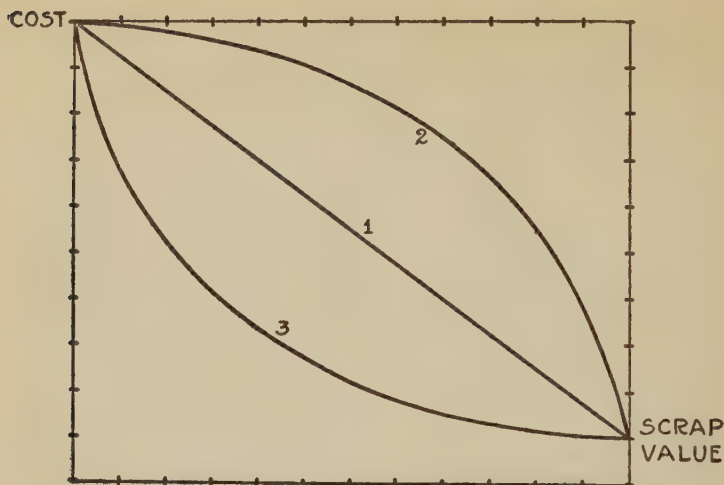


FIG. 14. Graphical representation of depreciation.

KEY. 1, Straight-line method; 2, Sinking-fund method; 3, Fixed-percentage-of-diminishing-value method.

The first step necessary in figuring the yearly depreciation of school buildings is the determination of a fair figure to represent the life of school buildings. Once this figure has been chosen, the assumption that the corresponding fraction of the original cost is lost each year on the average would be justified. In the light of competent advice it is assumed that the depreciation of school buildings throughout the state should be figured on the basis of an estimated life of seventy-five years. On this assumption a school building loses one seventy-fifth, or $1\frac{1}{3}$ per cent, of its original cost value each year. Since available figures on the valuation of school buildings in the State of New York are in terms of "present value" rather than original cost figures, it becomes necessary so to relate the present value of many buildings of widely varying ages to their original costs that a percentage of depreciation in terms of present value may be determined. . . . This depreciation in one year of $1\frac{1}{3}$ per cent of original value [for the school buildings of New York City] is therefore equivalent to $1\frac{1}{3}$ divided by $62\frac{2}{3}$ [the ratio of present to original value, based on an average of twenty-eight years for all school buildings of the city], or 2.1 per cent of

the present value in 1921. The rate of depreciation having been figured as 1.8 per cent in 1910 [based on an average age of twenty-one and one-half years] and 2.1 per cent in 1921, it seems fair to assume that the best figure to represent the annual depreciation in the present values of New York City's school buildings during the past twelve years is 2.0 per cent.

It may be noted that this is an adaptation of the so-called straight-line method to the buildings of New York State after the average service life of the buildings had been determined.

Importance of calculating depreciation. A consideration of the theoretical aspects of depreciation may seem to have little bearing on school administration. When a plant is worn out, we ask our taxpayers to provide funds for another structure. Bonds are voted, interest and principal payments are made, and we are content if the bonds do not outlast the service life of the building. But this, after all, is an expensive process in the end. Industrial corporations have long since learned that the economical plan is to set aside each year an amount which at the expiration of the service life of a given plant will be sufficient with interest accumulations to replace it. This same plan is not out of place in considering the depreciation and ultimate replacement of school buildings.

P. D. DuPont points out the following: ¹

If we make a careful examination of old schools, we shall probably reach the conclusion that a forty-year cycle for these buildings is about as certain as the one-year cycle for the wheat crop. At most there will be little dispute between forty and fifty years. One million dollars or any other sum invested in schools today will certainly disappear in forty or fifty years, if history may be taken as a guide. Replenishing \$1,000,000, if undertaken in time, is not expensive.

At 4 per cent the sum of \$10,520 set aside and invested annually will equal \$1,000,000 in forty years. At $4\frac{1}{2}$ per cent the sum of \$9346, and at 5 per cent the sum of \$8278 will equal the same

¹ P. D. DuPont, "Schools — Maintenance and Replacement," *American School Board Journal*: Vol. 72, No. 5, page 51 (May, 1926).

amount. In other words, 1 per cent of the value of our schools set aside each year will maintain the whole system indefinitely without other burden; that is, if there is no increase in the number of pupils year by year.

It would seem advisable, therefore, for school districts to plan to create funds which, with their interest accumulations, will be sufficient to replace a structure at the end of its estimated service life, thereby avoiding the necessity of interest obligations or heavy tax levies at the time the buildings are replaced. Such a policy would be farsighted in contrast with our present policies.

Recording depreciation. Certain current practices in connection with the recording of depreciation were pointed out in the section of this book that deals with school accounting. The relation of this factor to the securing of a true balance sheet was also mentioned. There are two elements to be taken into account — the expense element (depreciation) and the true valuation of the asset. The accounts of capital investment should show at any time the original cost of the building — information of value for many purposes and worth the effort needed to maintain it distinct from other items. They should show in addition the depreciation and appreciation by periods and the present worth. Such records make it possible to estimate the imputed interest.

The form of plant ledger or register used need not be elaborate. It should provide spaces for the original cost, for the cost of additions, for periodic appreciation and depreciation, and for periodic estimates of present worth. A journal entry made at the time the depreciation or appreciation is computed will constitute the original entry from which the posting to the ledger is made. Needless to point out, a clear distinction must be made between capital outlay and maintenance charges. Otherwise the plant will soon have an enormously inflated value.

MAINTENANCE POLICY OF A SCHOOL DISTRICT

Depreciation of the school plant is continuous from the time the plant is erected until it is abandoned; but its rate may be retarded materially by the frequency and thoroughness with which repairs are made. Whether the administrator is interested in the theory of depreciation or not, he must give careful thought to the practical and pressing problems involved in keeping the school plant in the proper state of repair.

What is to be maintained? The problems involved in maintenance may be divided into three groups — school grounds, school buildings, and school equipment. The term “school grounds” includes future sites, athletic fields, and present sites including lawns, walks, drives, shrubbery, fences, playground equipment, flagpoles — in short, anything on or about the school yards and playgrounds. “School buildings” includes walls, roof, windows, doors, basements, fire escapes, blackboards, floors, boilers, radiation, ventilating machinery, plumbing and light fixtures, and any buildings other than the main school building constituting a part of the physical plant. “Equipment” includes pupils’ and teachers’ desks, tables, lockers, laboratory furniture, gymnasium equipment, books — anything either fixed or movable, in use or in storage, that may not properly be considered a part of the building itself. In a city of any size this constitutes a formidable array of materials and implies not only labor, material, and time to keep in repair, but a more or less complicated organization effectively functioning at all times.

The present treatise does not attempt to indicate in detail the best methods or the current practices of maintaining the many parts of the school plant. Since so many trades and processes are involved, such a treatment of this subject would constitute in itself an elaborate treatise.¹ This account is

¹ The reader is referred to the materials listed in the annotated bibliography following this chapter. These describe processes that are used successfully by school systems to keep the school plant and equipment in repair.

concerned with the administrative aspects rather than with technical details of maintenance of the school plant.

Methods of handling maintenance. Two methods of handling the problems of school-building maintenance are in use. A school district may contract for all its repairs, or it may maintain its own repair crews and repair shop. Advantages are claimed for both plans. Under the contract plan the repairs can be completed during vacation periods; whereas, if a school maintains regular repair crews, it must keep them busy during the entire year unless their wages for part of the year are to represent an absolute loss to the tax-paying public. Under the former plan, the school district gets the benefit of competitive bidding, whereas under the alternative plan the work is done on a straight time basis. Many persons would seriously question whether on such a basis the work could ever be done as economically from a purely monetary point of view. There is, however, the opposing contention that it is done better, and is therefore in the end fully as economical.

In an investigation of business methods of twenty-five Eastern cities the writer found that fifteen of them employed their own repair gangs, and twelve of these maintained more or less fully equipped repair shops. Several others used the manual-training shops for doing repair work. In this group of cities, at least, the boards of education prefer the straight time plan to the contract method.

Maintenance organization. Whichever method is used, a school system composed of several units should employ a superintendent of buildings and grounds. In accordance with the best thinking of students in the field of administration, this superintendent should be a member of the staff of the superintendent of schools. He should work under the direction of the board of education, should have an educational point of view, and should remember always that schools

are organized and maintained for the sole purpose of educating children. He should be honest, courageous, alert, intelligent, and able to lead the men under his direction. He need not be a master of a trade, but his technical training should be such that he recognizes good work when executed by a mechanic and knows the amount of time required to do it. While graduation from a technical course in a college is desirable, it is not imperative.

He should be assisted in his work by competent clerical, architectural, and mechanical assistants. Sufficient office help should be employed to handle the purely clerical work of copying orders, writing requisitions, taking dictation, and keeping the accounts of such a department. The architectural help should provide the drawings together with whatever specifications are required by the maintenance staff. But the overhead of this department should not exceed 10 or 15 per cent of the total amount allocated to the maintenance of the plant.

The maintenance personnel should consist of clerks, accountants, architects or draftsmen, and a sufficient number of mechanics to keep the school plant in good operating order at all times and to form the skeleton of the repair organization during the summer. Workmen skilled in more than one trade should be preferred to men who have only one specialty. They should be honest, trustworthy, intelligent, versatile, and able to adapt themselves to the varying conditions that they will meet. Ramsey suggests the following classification of trades: carpentry, painting, electrical equipment, plumbing, heating and ventilating, and labor and masonry.¹ To these the writer would add a seventh — landscaping. He would have a foreman for each group in a large system. In a small system he would combine carpentry and painting under one foreman, and the pipe trades — plumbing, heating, ventilat-

¹ H. E. Ramsey, "The Maintenance Organization," *American School Board Journal*: Vol. 72, No. 4, page 55 (April, 1926).

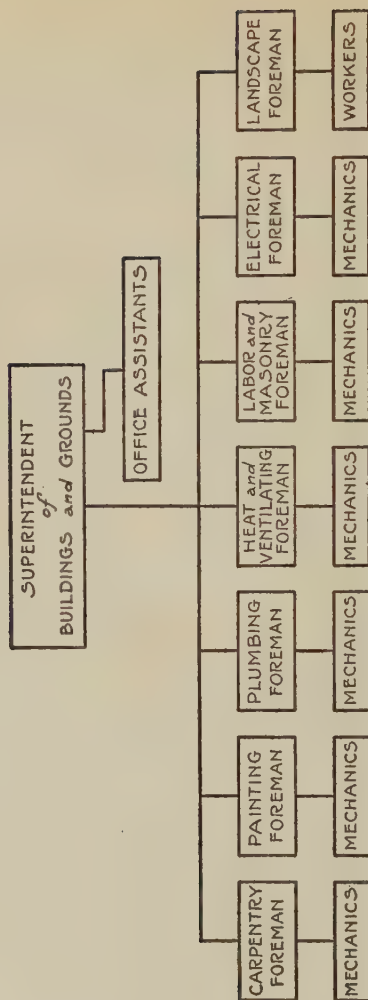


FIG. 15. Maintenance organization for a large city. The flow of authority is from the superintendent of schools. The office assistants include clerks, accountants, and architects or draftsmen.

ing, and electrical equipment — under another. The workmen employed under such an organization should handle any ordinary repairs during the academic year, and should constitute a skeleton organization to which other mechanics might be added for repair work during the summer vacation.

If, in a small system, only one man can be employed, that man should undoubtedly be a carpenter who is an all-round mechanic capable of doing many miscellaneous jobs, including painting. A second man in a small system may be a pipe tradesman who is employed as a school janitor or engineer but who has assistants to relieve him when he is sent out on a repair mission during school time. The superintendent of buildings and grounds in a small city may be an experienced manual-training instructor who has had some practical experience as a tradesman. The small city may very profitably employ some outside mechanics to do such highly specialized work as brick laying and electric wiring rather than to attempt to maintain an organization which represents the different trades.

Figure 15 shows a proposed maintenance organization suitable for a relatively large city, while Figure 16 gives the type of one with which a small city should content itself.

Determining the maintenance program. The maintenance work to be done depends upon a thorough inspection of the school plant and its equipment. This inspection may be made by the superintendent of buildings and grounds and the members of his staff, and by them alone. The chances are that this procedure will result in overlooking many small items which may be particularly annoying to members of the educational staff. A better plan is to enlist the coöperation of the members of the instruction and operation staffs in this important task. Janitors should always be on the alert, immediately reporting conditions which seem to need attention. Teachers and principals should report needed repairs.

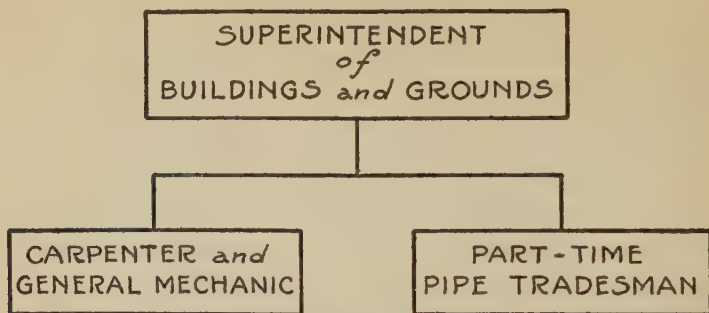


FIG. 16. Maintenance organization for a small city. The flow of authority is from the superintendent of schools.

In the spring of the year prior to compiling the budget, all three groups should make a thoroughgoing inspection of every building, from the sub-basement to the roof, listing all items which need attention. After these reports, which should be made on special forms, have been examined, the superintendent of buildings and grounds together with representatives of the instruction staff—the building principal, assistant superintendent, or superintendent—should go over the items and classify them into two groups—necessary items and desirable but not absolutely essential items. Such procedure is to be commended because by it the problem is viewed from several points. The instruction staff views the problem from the educational angle, the janitorial staff from the custodial angle, and the maintenance staff considers the needs of the buildings from a detached point of view. The joint review by representatives of these different departments insures a proper safeguard.

The painting of school buildings should receive specific attention. Within a cycle of seven or eight years all buildings should be painted inside and out to preserve them and to add to their attractiveness. The painting of a certain number of buildings or rooms should be designated for each year so

that the burden will be distributed equally over the period covered and not fall too heavily on the budget of any one year.

The maintenance budget. After the items have been agreed upon and classified as necessary and desirable, the division of the budget devoted to maintenance should be submitted to the board of education and, in fiscally dependent cities, to the reviewing body. This section may be prepared either by lumping an amount for maintenance, based largely on the experience of previous years, or by estimating the cost of each item and budgeting each one separately. The former method implies that the repairs will be adjusted to the amount available; the latter adjusts the budget to the program of maintenance. The second plan is undoubtedly better practice, because boards of education and reviewing bodies can be more easily convinced of the necessity of voting funds for specific items than of granting a lump sum for repairs. In the twenty-five Eastern cities visited by the writer, however, the prevailing practice was to "lump" rather than to base the budget on specific items.

Maintenance accounting. A system of records and blank forms is imperative if a maintenance department is to function properly. These should serve two purposes—to expedite the work and to enable costs to be accurately computed. There should be a schedule of accounts for use in recording expenditures and securing the proper controls over the budgetary appropriations. The schedule outlined in the chapter on accounting is standard.¹ Accounts with each building may also be carried, and certain subsidiary accounts may be opened under the general headings given in the schedule.

Certain blank forms which are highly desirable for this purpose are requisitions for repairs, work orders, time cards, purchase orders for maintenance department, interdepartment work orders, and job record cards.

¹ See pages 136 ff.

Requisition for repairs. This should consist of at least two forms — a long form for the report of items from the annual inspection and a short form to be used during the year for miscellaneous items. The blank should contain space enough for a full description of the needed repairs and for the signatures of the building principal and the superintendent.

Work order. (See Form 15 in Appendix.) A work order is a form issued by the superintendent of buildings and grounds to the foreman directing him to do a piece of work. This order must give the date, the name of the department involved, the job number, the exact location, the precise work to be done, and an estimate of cost. Blanks for the notation of the completion and the cost of a job should be provided. Duplicates should be kept by the superintendent of buildings and grounds as checks on the progress of the work.

Time card. (See Form 16 in Appendix.) The time card which is to be kept by each man should have spaces for name of workman, the job number, the time spent, the unit cost, and the total cost for each job. From these cards the labor cost of each job can be computed.

Purchase order for maintenance department. The superintendent of buildings and grounds is sometimes responsible for the purchases necessary for the maintenance department. In that event, special orders should be made in triplicate with ample provision for notations of the job involved and the accounts to be charged. One of the copies may be delivered with the materials and used as a receipt to be sent to the central office, indicating that the materials have been delivered to the proper place. If no separate purchase order is desired, then the regular order may be used and all purchasing may be handled by one individual.

Interdepartment work order. This form is used by the various foremen to indicate the work on a job that must be done by another department. For example, a partition that

is being moved may have a water pipe which will be moved by the plumbing department. The use of an interdepartment work order makes it possible for this job, already authorized by the superintendent of buildings and grounds, to be completed without requiring that individual to give his time and attention to the writing of supplementary orders.

Job record card. (See Form 17 in Appendix.) A job record card should be made for each job and numbered to correspond to it. An estimate of the cost is entered on it. Spaces are provided for recording the time from the various time cards and the cost of materials used. When a job is completed and all items transferred to this record card, the exact cost of the completed job can be ascertained and compared with the estimate. Summaries can also be made, from time to time, which will show the work of the maintenance department.¹

Modifications for small school systems. The use of so elaborate a plan is neither possible nor desirable in a small school system where only one repair man is employed. The repair requisition and the work order are all that are necessary. The purchases can be handled as are all purchases. Time cards and job record cards can be kept, but they are not essential and will add to the clerical burden.

Abandoning old buildings. The time to abandon an old building is a problem which ultimately confronts a board of education in connection with every structure under its jurisdiction. As a building grows older, the maintenance charges increase if it is to continue to serve the school children as it should. When to cease repairing an old building becomes therefore a very pertinent question. After pointing out that educational utility is always the dominant factor in deciding this matter, Almack gives the four following criteria : ¹

¹ John C. Almack, "The Maintenance of School Buildings," *American School Board Journal*: Vol. 71, No. 1, page 45 (July, 1925).

1. A building should be abandoned at once when it is unsafe or when the health and morals of the children are seriously threatened by its continued occupation.

2. It should be abandoned when the maintenance and added costs of operation are sufficient to offset maintenance and interest charges on a new building of equal capacity and utility.

3. It should be abandoned when it is inconvenient from the point of view of accessibility, as when the residence section has moved away.

4. It should be abandoned when manifestly unsuited to modern school needs and too far depreciated physically to warrant alterations and additions.

Keeping these criteria in mind and using sound judgment, a board of education will have little difficulty in determining the point at which a school plant should be abandoned and when additional money should be invested in repairs.

Selected References

ALMACK, JOHN C. "The Maintenance of School Buildings," *American School Board Journal*: Vol. 71, No. 1, page 45 (July, 1925).

Depreciation, maintenance — its organization and execution — and the abandonment of old buildings are discussed in this outstanding article.

BRUCE, WILLIAM G. "An Outline for School Building Inspection," *American School Board Journal*: Vol. 70, No. 1, page 123 (January, 1925).

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BURCHARD, F. F. "Maintenance and Upkeep of Public School Buildings," *American School Board Journal*: Vol. 63, No. 2, page 41 (August, 1921).

Deals in the main with schoolhouses, but discusses the painting of buildings and treatment of floors as part of maintenance work.

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ENGELHARDT, N. L. and FRED. *Public School Business Administration*. Teachers College, Columbia University, New York; 1927.

Discusses plans for plant maintenance in Chapter XVI, and depreciation and insurance in Chapter XVII.

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Discusses need for coöperative economy in school operation and maintenance. Emphasizes the responsibility of teachers, janitors, principals.

HARWOOD, S. G. "Repairs to School Buildings," *American School Board Journal*: Vol. 60, No. 3, page 35 (March, 1920).

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HECKEL, GEORGE B. "Painting School Buildings," *American School Board Journal*: Vol. 55, No. 5, page 24 (November, 1917).

This is a good report, dealing with the various types of painting to be done in and about school buildings.

KESTER, ROY B. *Depreciation*. The Ronald Press Company, New York; 1924.

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KINKADE, ARTHUR. "Miscellaneous Repairs and Replacements," *American School Board Journal*: Vol. 55, No. 1, page 23 (July, 1917).

Discusses care and replacement of school equipment so as to get the best results, also exterior and interior painting, seating, and blackboards.

LAUGHLIN, E. V. "Planning the Summer's Repairs," *American School Board Journal*: Vol. 70, No. 5, page 36 (May, 1925); Vol. 72, No. 5, page 55 (May, 1926).

Lists items to be checked for repairs. Argues for use of vacation time for making repairs. Discusses the personnel of the repair department.

RAMSEY, H. E. "School Building Maintenance," *American School Board Journal*: Vol. 72: No. 1, page 88 (January, 1926), No. 2, page 51 (February, 1926), No. 4, page 55 (April, 1926), No. 5, page 108 (May, 1926), No. 6, page 54 (June, 1926); Vol. 73: No. 1, page 44 (July, 1926), No. 3, page 50 (September, 1926).

This is a series of articles by a superintendent of buildings and grounds describing in great detail the organization for maintenance, the procedures used, and the accounting system utilized in a medium-size Western city. It is a splendid presentation of the entire problem.

REEDER, WARD G. *The Business Administration of a School System*. Ginn & Co., Boston; 1929.

Chapter XII is devoted to the activities involved in the maintenance of school buildings. It contains worth-while forms.

RIESBECK, E. W. "Summer Care of School Heating and Ventilating Plants," *American School Board Journal*: Vol. 73, No. 1, page 65 (July, 1926).

Discusses the inspection of heating and ventilating systems and emphasizes importance of upkeep from an economic point of view.

SCHWARTZ, H. M. *Improvement in the Maintenance of School Buildings*. Teachers College, Columbia University, New York; 1926.

Makes a careful analytical study of actual practices in school building maintenance and suggests other possible practices.

SMITH, HARRY P. *The Business Administration of a City School System* (*Contributions to Education*, No. 197). Teachers College, Columbia University, New York; 1926.

Considers briefly the maintenance policies of twenty-five Eastern cities.

STRAYER, GEORGE D., and others. *Report of the Survey of the Public School System of Baltimore, Maryland*: Vol. II, pages 45-55. Board of School Commissioners, Baltimore; 1921.

Discusses the maintenance of buildings in Baltimore, where responsibility is divided between city and school boards.

— *Report of the Survey of Certain Aspects of the Public School System of Providence, Rhode Island* (School Year 1923-1924), pages 43-44. Teachers College, Columbia University, New York.

Outlines the maintenance policy of this city, where school buildings are under control of municipal government, and recommends changes.

— *Report of the Survey of the Schools of Watertown, New York*, pages 33-35. Teachers College, Columbia University, New York; 1925.

Recommends a maintenance program and maintenance personnel for this city.

— and HAIG, ROBERT M. *The Financing of Education in the State of New York*. The Macmillan Company, New York; 1923.

Chapter V contains one of the few attempts in American educational literature to set up a method of computing depreciation on school buildings. Specific application is made to New York State.

WARING, RALPH G. "The Maintenance and Reconditioning of School Equipment," *American School Board Journal*: Vol. 73, No. 1, page 69 (July, 1926).

Discusses methods and economic value of salvaging and reconditioning school equipment.

CHAPTER ELEVEN

INSURING SCHOOL PROPERTY

THE insuring of school property is an important school business activity, and insurance is a significant item in every school budget, not because it is in itself a large financial item but because it represents protection. The loss due to a lack of such protection might assume large proportions.

From a legal point of view the placing of insurance on school property is not commonly questioned. It is usually assumed that granting a district the right to construct a building implies also the power to insure it. Some state laws specifically provide for the insuring of school buildings of certain types; the New York law, for example, makes the trustees of any school district who neglect to carry insurance personally liable for any loss that may be incurred through their negligence.¹

BASIC PRINCIPLES OF INSURANCE

Insurance is based upon the law of averages, and, according to Melchior, the essential features of this particular application of the law are four in number: ²

1. The existence of a known danger to which all property owners are exposed.

2. The probability that loss from this danger will not fall upon all exposed to it.

3. The assumption that when the loss occurs it will fall so heavily upon those to whom it comes that money indemnity would become a matter of great importance to them.

4. A fairly accurate knowledge of property annually destroyed by this danger, so that the insurer may calculate his risk with reasonable certainty.

The same author says, "A sound insurance program for schools must, therefore, be based upon the hazard elements of

¹ William T. Melchior, *Insuring Public School Property*, page 9. (Teachers College, Columbia University, New York; 1925.)

² *Op. cit.*, page 10. (Used by permission.)

the building, its surroundings, its physical make-up, equipment, and use."

The basic principle of insurance is a distribution of the loss of one over many. It is founded on the premise that losses do not occur simultaneously to all subscribers. Individual losses do not occur in any regular order, but there is some regularity of occurrence when taken collectively. This collective regularity is used as a basis for computing the deposit, or premium, required from each subscriber. These premiums are computed on rates which, in the final analysis, are fixed so that when they are multiplied by the amount of insurance carried they should produce from the many policyholders a fund sufficient to pay all ordinary losses when they occur, to meet the expenses of conducting the business, and to provide a fair return to the stockholders of stock companies.

METHODS OF INSURING

Two methods of insuring public school property are in use — insurance in private companies organized for the purpose of giving this kind of protection, and self-insurance. A large percentage of the school property insured under the first plan is insured in stock companies which charge a fixed rate for the protection offered. A few districts insure in mutual companies, though the question of the legality of this procedure sometimes arises. Self-insurance involves the building up of a sinking fund to indemnify a school district against losses which may occur and the fund is drawn upon for that purpose alone. This plan should be sharply distinguished from the policy of carrying no insurance at all and at the same time creating no indemnity fund. Such a policy is not self-insurance but its converse.

Insurance in commercial companies. Insurance in stock and mutual companies is the prevailing type. The practices of the former have been so standardized and carefully regu-

lated by statute that, for a given territory in a city, the rate is readily determined for a building with a high degree of accuracy and full assurance is guaranteed that, in the event of loss, the district will be reimbursed in accordance with the terms of the contract set forth in the insurance policy. Insuring in a mutual company does not always make it possible to compute the rate so accurately. Furthermore, if each participant in the plan becomes a stockholder, there remains the question of whether a school district may become a stockholder in any concern.

Self-insurance. Self-insurance is based on the contention that, in the long run, the premiums paid for insurance protection aggregate far more than the losses incurred. Thomas asserts that thirty-three school systems investigated by him in 1918 had paid out in the ten years preceding \$132,880.41 in excess of the losses reimbursed on a total premium outlay of \$871,491.34. During the same time the State of Oregon paid out \$173,715.50 in excess of the losses paid.¹ Self-insurance is a safe plan for a comparatively large city whose fund is extensive enough to cover the loss of a large building; but it is difficult to justify self-insurance in the small city whose fund would not in many years be large enough to cover the loss of one of its school plants. For the benefit of such cities, some administrators have suggested a state insurance fund to which all school districts would contribute. In the event of loss, the district would be reimbursed from this state fund. The proponents of this plan assert that a considerable saving would be effected to the districts participating. Thomas's figures give support to this contention.

The operation of the self-insurance plan in a large city is described in the following quotation:²

¹ R. H. Thomas, "Fire Insurance in Public Schools," *American School Board Journal*: Vol. 57, No. 3, page 35 (September, 1918).

² William G. Bruce, "Fire Insurance for School Property," *American School Board Journal*: Vol. 70, No. 4, page 101 (April, 1925).

Philadelphia created an insurance fund in December, 1912, and at the present time has approximately \$1,500,000 in this fund. The city has placed in this fund approximately the amount necessary to carry fire insurance on all of their buildings and such surplus funds which they have available at the end of each year. The Philadelphia district during the last ten years has had five losses of approximately \$300,000 which have all been paid from the insurance fund.

During the period covered by the accumulation of the self-insurance fund, insurance in stock or mutual companies should be used to supplement the fund, and this supplemental insurance should be gradually reduced as the fund is increased. A city which has, for example, been paying \$10,000 a year in premiums may use \$5,000 of that amount to start a fund, leaving the other \$5,000 to pay insurance premiums. This process would be repeated year after year until such time as the fund would be large enough to cover any loss the district might incur. The insurance policies could thus with safety be discontinued.

TYPES OF INSURANCE

There are in general four types of insurance by which school districts are indemnified against loss — flat-rate insurance, co-insurance, mutual insurance, and casualty insurance.

Flat-rate insurance. This type of insurance requires the payment of a fixed rate for the insuring of a stated percentage of the property. Any loss up to the amount stated is indemnified in full; any loss beyond that percentage is not covered. If, for example, a building appraised at \$100,000 and insured for 50 per cent of that value suffers a loss by fire of \$60,000, the district would be reimbursed for \$50,000 and no more.

Co-insurance. Co-insurance is that form in which the owner becomes co-insurer with the insurance company. This type provides that when a policyholder fails to carry an amount of insurance which bears to the value of the property the relationship that is required by the terms of the clause, he

will be considered as having assumed self-insurance for the amount of the shortage. For example, a district has a school building whose appraised value is \$100,000. It insures that structure under an 80 per cent co-insurance clause for only \$50,000. As a consequence it would be carrying self-insurance from the insurer's point of view for \$30,000, which is the difference between the \$80,000 that should be carried and the \$50,000 that actually is carried. In fairness to others who carry an adequate amount, that district should not be reimbursed in full for a loss but should receive an amount equal only to five eighths of the loss. To reimburse for the full amount of the loss would be equal to paying \$80,000 if the property were entirely destroyed, whereas the insured paid for the protection of \$50,000 only.

The following examples illustrate the operation of co-insurance on the basis of 80 per cent, though it should be borne in mind that co-insurance may be carried for more than 80 per cent or for less.

Example A :

Sound value of school property	\$100,000
Insurance carried under 80 per cent clause	\$80,000
Loss	\$50,000

$$\frac{\text{Insurance carried } \$80,000}{\text{Insurance required } \$80,000} = \frac{100 \text{ per cent of loss payable}}{= \$50,000}$$

Example B :

Sound value of school property	\$100,000
Insurance carried under 80 per cent clause	\$60,000
Loss	\$50,000

$$\frac{\text{Insurance carried } \$60,000}{\text{Insurance required } \$80,000} = \frac{75 \text{ per cent of loss payable}}{= \$37,500}$$

The advantage claimed for co-insurance is that it is comparatively cheap. Since few losses are total losses, the school district, it is asserted, is justified in assuming a small part of the risk. But it is of prime importance that the full value of

the property be ascertained accurately and that the insurance be kept up to the required percentage of this sound value at all times. Especially in periods of increasing values is it necessary frequently to have the property reappraised. On the other hand, depreciation should be computed from time to time, and the insurance readjusted to the new values, or the district will pay excess premium.

Mutual insurance. When a number of owners combine for the purpose of insuring the risks of the participating members, the scheme is known as mutual insurance. Such companies are usually membership corporations without capital stock. The profits, if any, are ascertained from time to time and distributed in the form of dividends to the policyholders after setting aside reserves for contingencies. It should be borne in mind that the policyholders of mutual companies are liable for all losses incurred while they are members. The original premiums paid by policyholders may or may not be enough to pay the losses. In this contingency they are assessed for additional payments. The advantage claimed for this type of insurance is that, in the long run, the net amount of the premiums is less than when insurance is carried in a stock company.

Casualty insurance. Any form of insurance which gives indemnity for losses arising from other causes than fire is called casualty insurance. This covers in general two types of risks — damage to property and legal liability from injury to the person or property of others. To the latter the term liability insurance is frequently applied. The most usual types of the former are windstorm, boiler, burglary, automobile, plate glass, and elevator. Of 535 districts in New York State listed in Melchior's study, 2 reported windstorm insurance; 63, boiler; 17, public liability; 2, burglary; 15, auto; 1, plate glass; and 2, elevator insurance.¹

¹ *Op. cit.*, page 10.

Boiler insurance is an especially desirable type of casualty insurance for a school district to carry. Every company writing boiler insurance has a staff of trained experts who make a periodic inspection of each boiler covered. This examination is in no sense a mere superficial survey of a heating plant but a most thoroughgoing inspection inside and out. Small defects are detected and remedied, and advice is offered on the economical operation of the plant, which often results in a saving on repairs and school operating expenses. Boiler insurance usually covers damage to the boiler itself, to the property of the insured, to the property of others, loss of life or injury to those employed by the insured, and loss of life or injury to those not employed by the insured.

The purpose of liability insurance is to protect the insured against the responsibility imposed by law for accidents which arise from the operation of his business or happenings on his premises. Factories carry it, and contractors use it to cover accidents. Such policies, in general, agree to defend all suits, whether groundless or not, which may be brought against the insured for accidental injuries suffered or alleged to have been suffered. In the event of an adverse decision in court, the indemnifying companies pay costs and damages up to the limits stated in the policy. Policies of this type also cover the compensation due employees under the laws of various states during the period of disability.

The modern multiple-indemnity boiler insurance policy provides payment up to the face of the policy for each explosion that may take place while the policy is in force. It also provides defense of any suits which may be brought against the insured as the outcome of any explosion.

KINDS OF INSURANCE POLICIES

Insurance policies are fundamentally contracts of indemnity in which the assured is indemnified in case of loss.

Three types of policies are found in use in the insuring of school property. They are individual, blanket, and schedule. An individual policy, sometimes called a specific policy, covers but one object at risk in one location. A blanket policy insures several different items either in the same location or in different locations, for a lump sum. A schedule policy incorporates in one policy form all the property insured. A schedule policy specifically states the amount of insurance on each building listed, while the blanket policy does not. "Business men and practical school men advocate for school property either the specific or the schedule in preference to blanket."¹

School boards commonly provide their own "rider" for all policies (see Form 18 in Appendix), thus assuring uniformity of policy regardless of the number of companies or of insurance brokers with whom school insurance is placed.

APPRAISING PROPERTY FOR INSURANCE PURPOSES

All insurance is based on "sound value." This is defined by insurance companies as "present replacement value less depreciation."² Various methods are used by school districts in arriving at "sound value." Table 26 shows the methods used in twenty-three Eastern cities visited by the writer.

TABLE 26

METHODS USED BY TWENTY-THREE EASTERN CITIES IN APPRAISING PUBLIC SCHOOL PROPERTY FOR INSURANCE PURPOSES

METHOD OF APPRAISING	NUMBER OF CITIES
Commercial appraisers	4
Local committee of contractors and real-estate men	10
Insurance appraisers	4
School board secretary or business manager	2
Board of education	1
Actual construction cost	1
City assessor	1

¹ *Op. cit.*, page 64.

² *Op. cit.*, page 13.

Apparently all these methods are acceptable to the insurance companies, but there is no guaranty that in the event of a loss a question of value may not be raised or even litigation initiated. Melchior reports that among 410 school districts in the State of New York reporting appraisals, 66.1 per cent were made by school authorities; 15.6 per cent by school authorities and insurance companies; 15.1 per cent by insurance companies; and 3.2 per cent by appraisal firms.¹ His study covered districts of every size. In a majority of the districts there was apparently no specified time for making appraisals.

Desirous of determining the best method of appraising school property for insurance purposes, the writer asked nine insurance experts to rank the various methods found. The ranks of their composite ratings appear in Table 27.

TABLE 27

RANK ASSIGNED EACH OF SEVEN DIFFERENT METHODS OF APPRAISING PUBLIC SCHOOL PROPERTY FOR INSURANCE PURPOSES

AGENCY MAKING APPRAISAL	RANK
Commercial appraisers	1
Insurance appraisers	2
School board at replacement value	3
Committee of contractors and real-estate men	4
Actual construction cost	5
School board secretary or business manager	6.5
City assessor	6.5

From these rankings it is apparent that an appraisal by a commercial concern is the most to be desired, while one by insurance appraisers ranks second. Either may be secured by any school district for a reasonable outlay; and each represents sound practice, for each assures a satisfactory settlement in the event of a loss.

¹ *Op. cit.*, page 170.

RATIO OF INSURANCE TO SOUND VALUE

The amount of insurance to be carried is a matter to be settled by the board of education and its executive officers in the light of all data available. Insurance companies tend to favor 80 per cent of sound value, using the co-insurance clause. Some even urge full insurance. These practices represent, of course, good business for them, though from the standpoint of the school district the amount of premium paid does not decrease in proportion to reduction of the percentage of value covered. Melchior's study showed the practices indicated in Table 28.¹

TABLE 28
RATIO OF INSURANCE CARRIED TO SOUND VALUE IN NEW YORK
SCHOOL DISTRICTS

CLASS OF DISTRICT	NUM- BER	ME- DIAN RATIO	AVER- AGE RATIO	RANGE OF RATIO	RANGE OF MIDDLE 50%
Cities — first class . .	3			0.0-89.44	
Cities — second class .	7		31.37	0.0-81.09	
Cities — third class . .	33	57.1	61.5	21.9-127.5	47.1-77.6
Villages over 4500 . .	29	73.6	71.1	23.1-123.2	54.0-90.2
Union school — four-year	176	63.9	63.7	7.1-127.3	50.0-78.6
Union school—three-year	51	66.7	66.3	20.0-150	53.3-75.0
Union school — two-year	10	70.3	69.4	42.9-93.8	53.9-90.9
Union school — one-year	21	57.1	64.4	35.7-107.1	55.0-77.3
Rural supervisory dis- tricts	115	54.6	56.2	17.1-114.3	44.4-65.9

The practice in New York State as a whole is to insure for about 60 per cent of the sound value of the school buildings, though some districts carry no insurance while others insure for an amount in excess of the sound value. Of course the latter are merely paying excess premiums, since they never could recover more than full value. In the light of such variability, a board cannot base its procedure on current practice but must look elsewhere for sound guidance.

¹ Adapted from Table 23 in William T. Melchior's *Insuring Public School Property*, page 93. (Teachers College, Columbia University, New York; 1925.)

DETERMINING INSURANCE RATES

While there is at present a lack of uniformity in rate making, the tendency is for it to become more and more scientific. In view of that fact, the school administrator should have some knowledge of the general procedure of establishing rates. The method of the Dean Analytical System used in approximately twenty-two states is therefore given here as typical. The objective of this system is, first, to establish equitable basic rates by methodical analyses of basic factors and comparisons of actual conditions with established standards; and second, to provide a flexible and logical method of constructing specific rates founded on these basic rates, thus reducing the possibilities of discrimination and error of omission. The basic rates are established by grading the towns, grading types of structures, and establishing basic rates for each type of structure in each grade of town. A specific building rate is then determined by inspection of the individual building, adding to the basic rate charges for deficiencies from the standards for structural features and charges for class of occupancy, and deducting credits for protective equipment such as automatic sprinklers, inside standpipe and hose equipment, chemical extinguishers, and other specified equipment.

Any insurer may procure from the rating board for his district or town a schedule showing the construction of the rate applicable to his property. He may do this directly or through an insurance broker. If it is found on examination of the schedule in effect that inadequate credit has been allowed for improved conditions, he may file a claim with the rating board for a revision of the rate. The same procedure is possible when charges are excessive. With this knowledge it is frequently possible for a school executive to secure lower rates, particularly by removing certain fire hazards that increase the rate and by improving the property from the standpoint of fire protection.

ALLOTMENT OF SCHOOL INSURANCE

No phase of school insurance has caused so much dissension among insurance brokers, and ultimately among patrons of the schools and taxpayers, as the allotment of insurance. Too much care cannot be exercised by boards of education and executives in allocating the insurance carried to the various brokers and companies operating in the school districts. Each local insurance broker feels that he should have "his share of the business." If that has not been openly, carefully, and judicially determined, there may be universal dissatisfaction. The sole criteria for distribution should be economy and efficiency.

Table 29 shows the methods used to allocate insurance in twenty-three of the twenty-five Eastern cities visited by the writer.

TABLE 29

METHODS OF ALLOCATING INSURANCE IN TWENTY-THREE EASTERN CITIES

METHOD	NUMBER OF CITIES
Equally among all agencies	6
One agency only	2
All agencies in proportion to strength of companies represented	5
Following recommendation of city insurance bureau	1
No definite plan	9
Total	23

The writer asked nine insurance experts to rank these methods. Table 30 shows the rank given on the basis of the composite judgment of these experts.

Of the plans listed, allocation on the recommendation of a city insurance bureau ranks first, and allocation to all agencies in proportion to the strength of the companies represented ranks second. Either plan tends to eliminate charges of politics and favoritism.

TABLE 30

RANKS ASSIGNED BY INSURANCE EXPERTS TO METHODS OF
ALLOCATING SCHOOL INSURANCE

METHOD	RANK ASSIGNED
Following recommendation of a city insurance bureau	1
All agencies in proportion to strength of companies	2
Equally among all agencies	3
One agency only	4
Politically or by no definite plan	5

Some school districts agree on a plan in conjunction with all the agents. Such a plan, after having been presented and discussed in an open meeting of the board of education with all agents participating, cannot be charged with unfairness or politics.

Examples of allocating insurance. Two plans of allotting insurance are submitted herewith. The first one is used by the Minneapolis Board of Education, which controls over 21,000,000 dollars' worth of school property.

The allotment of insurance to agents is based upon a mathematical formula which has worked out so equitably to the fire-insurance agencies in Minneapolis that almost all occasion for dissatisfaction has been removed. The factors which enter into this formula are secured from each agent annually through a questionnaire.

From the answers given in the questionnaire certain factors are secured which, when applied to the simple mathematical insurance formula used by the Board,¹ give the amount of insurance to which the agency is entitled. The chief factor

¹The formula is: $x = \frac{300 y + 250,000}{7}$, in which x equals the insurance allotment, y equals the amount of taxes multiplied by the percentage of the business actually devoted to fire insurance, the constants in the formula being so selected as to yield allotments of \$40,000 and \$250,000, corresponding respectively to values of \$100 and \$5000 for y .

in computing the amount of insurance to be allotted to any agency is the amount of taxes, real and personal, paid to the City of Minneapolis by the active officers of the agency.

After several years' experience in the allotment of fire insurance, \$40,000 has been found to be the correct minimum to be given to any one agency. A maximum of \$250,000 was also set for any one agency in order that no agency would get an unduly large proportion of the total amount of insurance written and that the agents who pay a small amount of taxes but who are in the majority might be protected equitably. Wherever possible, instead of writing a number of policies through several agencies in the same company, one general policy is written in which all agencies of the company participate. This simplifies the records, reduces the number of policies handled, and reduces the expense and trouble when adjusting fire losses.

Converted into a schedule, the formula gives the following: ¹

AGENT'S TAXES AS REPORTED BY HIM, AND UPON WHICH HIS ALLOTMENT OF INSURANCE IS BASED	ALLOTMENT
<i>y</i>	<i>x</i>
\$ 0 — \$ 100	\$ 40,000 (Minimum)
100 — 400	50,000
400 — 700	60,000
700 — 900	70,000
900 — 1100	80,000
1100 — 1300	90,000
1300 — 1700	100,000
1700 — 2200	120,000
2200 — 2700	140,000
2700 — 3100	160,000
3100 — 3600	180,000
3600 — 4000	200,000
4000 — 4500	220,000
4500 — 5000	240,000
5000 — Over	250,000 (Maximum)

¹ Data from George F. Womrath, Business Superintendent, Board of Education, Minneapolis, Minnesota.

The second plan, operating equally well, is used by a small Middle Western city.¹ Insurance is allocated on the basis of school taxes paid by each agency and the amount of local insurance in force through each agency. For example, the total taxes paid by all agencies is \$20,000; the total local insurance carried is \$4,000,000; and the school insurance carried is \$450,000. An agency paying \$2000 in taxes and having \$1,000,000 of insurance would receive $\frac{\$2000}{\$20,000} \times 50$ per cent of total amount of insurance, and $\frac{\$1,000,000}{\$4,000,000} \times 50$ per cent of total amount of insurance, or 17.5 per cent of the \$450,000 of insurance carried; that is, \$78,750.

Any board of education can procure a working agreement through the coöperation of the insurance agencies. Such an agreement may be as effective as either of the methods suggested here and would eliminate many of the difficulties that tend to arise in school insurance.

MATURING OF INSURANCE POLICIES

Policies may mature any time up to a five-year period. A three-year policy carries as a rule two and one-half times the premium exacted for a one-year policy, while a five-year policy is written for four times the one-year rate. If the interest on the money saved by investing in the longer-term policy is considered, there is little choice between the three-year and the five-year policy. The longer-term policies are favored over the one-year policies in twenty-two of the twenty-three cities visited by the writer that insured in stock companies.

The policies should be so written that an equal amount of premium money is payable each year. Such a plan makes it possible to budget the insurance item and keep the tax levy for this purpose at a uniform rate. It is also of advantage to

¹ Lawrence, Kansas.

the business office to have these policies all mature concurrently—that is, on the same date. In the event that policies are found to mature irregularly, they may be canceled and rewritten to mature equally over a period of three years or five years with no loss to the school district.

RECORD OF INSURANCE CARRIED

An adequate insurance record is essential to the record system of every school business office. While as a rule the agencies notify the insured prior to the expiration of the policies carried, yet a matter as important as keeping insurance in force should be the responsibility of the public school executives in regard to keeping records of the dates of policies. That such records are regarded as essential is shown by the fact that the writer found adequate forms for them in twenty-two of the twenty-three cities visited by him which carry insurance in private companies.

This record may have one of three forms — a loose-leaf record (see Form 23 in Appendix), a bound book, or a card file. The following facts should always be recorded: property covered, names of insuring companies, amount of insurance, rate, premium, length of time to run, policy form (which may be keyed with blank form of policy filed elsewhere), date of expiration, number of policy, and the name of broker or agent. The advantage of the card form is that the expiration date can be shown on tabs which appear above the filed cards themselves. Of course, if the expiration date is the same for all policies maturing during the year, such a device is unnecessary.

PROOF AND SETTLEMENT OF LOSSES

School administrators and boards of education, in the event that they suffer a loss, should know the routine so that all requirements can be met. The usual policy stipulations are that the insured do the following:

1. Give immediate notice in writing to the company.
2. Protect the property from further damage.
3. Separate the damaged and undamaged property.
4. Put the property in best order possible.
5. Furnish a complete inventory of destroyed, damaged, and undamaged property, stating the quantity and cost of each article and the amount claimed thereon.
6. Render to the company within sixty days after the fire (unless such time is extended by the company) a proof of loss in the form of an affidavit stating the knowledge and belief of the insured as to the following:
 - (a) The time and origin of the fire;
 - (b) The interest of the insured and all others in the property;
 - (c) The cash value of each item thereof and the amount of loss or damage thereto and all encumbrances thereon;
 - (d) All other contracts of insurance, whether valued or not, covering the property;
 - (e) Any change in the title, use, occupation, location, possession, or exposures of said property since the issuing of the policy;
 - (f) By whom and for what purpose any building described and the several parts thereof were occupied at the time of the fire.

Other provisions for submission of plans, examination of books of accounts, bills, vouchers, records, etc., are also set forth in filing proof of loss.

Inventory of school property. One point merits extended mention here: An accurate inventory of the contents of all school buildings should be made at regular intervals, certainly not less frequently than once each year. In general this list will include all items that have a service life of more than one year and that are not an integral part of the building in

which they are located. Such an inventory serves the dual purpose of apprising the administration of the property actually owned, and of indicating its value in case of loss by fire or other cause covered by insurance.

An inventory book should be used for the purpose, which will include spaces for the quantity of each article, the name and address of the vender, date of purchase, cost, rate of depreciation, and the value at the end of each inventory period. In the larger systems the inventory may be taken by clerks under the direction of the central administrative office or the building principal. In the smaller schools this responsibility may devolve upon the school board clerk or the office secretary.

Settlement of partial loss. Once a settlement has been made for a partial loss, the insurance companies are liable only for the balance of the policies carried, unless they are canceled and new ones rewritten for the amount of protection desired.

FIRE PREVENTION AS INSURANCE

Melchior says : ¹

The cheapest and best form of protection against fire is prevention. . . . Until everyone responsible for a school plant knows and acts in accordance with principles of fire prevention, the insurance policy is but an attempt at shifting responsibility; for, although insurance premiums partly buy back a destroyed building, they can never buy back lives.

In locating and constructing school buildings, architects and boards of education with their executive officers should so locate the building that the exposure to external fire hazards will be reduced to a minimum. They should then give careful consideration to fire-resistive construction — fireproofing, particularly walls, stairways, and floors; roofing with fire-resistive materials; installing electrical equipment strictly in

¹ William T. Melchior, *Insuring Public School Property*, page 49. (Teachers College, Columbia University, New York; 1925.)

accordance with the codes of the National Board of Fire Underwriters; placing furnaces, boilers, flues, and steampipes so that the fire hazards from those sources will be reduced to a minimum. An examination of plans and specifications by an insurance expert will frequently reveal defects, which are really fire hazards, that can be avoided in construction. Some state laws require that plans and specifications be submitted to a local or state authority to insure the observance of statutes relating to fire prevention and protection. Old buildings can be remodeled so as to reduce materially or eliminate wholly fire hazards. One of the most comprehensive programs possible for removal of fire hazards is the one laid down in 1916 by Superintendent Spaulding of Minneapolis. His program listed thirty-six items of major importance from additional fire-extinguishing apparatus to metal self-closing waste cans. So pertinent is this list that it is here quoted in full:¹

A school executive may well follow the example set by Superintendent Spaulding in ferreting out the danger points in his schools and recommending to his board and community action for their removal or diminution. Spaulding's thirty-six items for protection were: separating fuel rooms from boiler rooms; fireproofing boiler-room ceilings; fireproof boiler-room doors; wire glass in boiler-room windows; metal window frames; iron ladders in boiler rooms; iron scaffolds to reach boiler valves; fireproof stairs in boiler rooms; removing woodwork from boiler rooms; patching holes in boiler-room walls and ceiling; iron ash platforms in boiler rooms; remodeling heating plant; outside exit from boiler rooms; fireproofing space under stairways; improving present fire escapes; firewalls or curtains between old and new parts of buildings; improving fire-alarm system; eliminating defects in electrical systems; repairing or removing gas equipment and extending electric lighting; installing red exit lights and signs in gymnasium-assembly rooms; fire-extinguishers equipment; gas shut-off valves; extension of gas stove

¹ N. L. Engelhardt, *A School Building Program for Cities*, pages 84-85. (Teachers College, Columbia University, New York; 1918. Used by permission.)

vents through roof; widening and otherwise improving stairways and additional stairways; replacing wood partitions between classrooms and corridors with fireproof material; protecting wood from steam pipes; repairing and fireproofing foul air duct; changing and adding doors other than those in boiler and engine rooms; alterations and repairs of motion-picture booth; metal lining for dry kiln and fireproofing dry heat boxes in high schools; self-closing metal waste cans; metal sawdust boxes; metal-covered shelves in manual-training rooms; oil containers for engine rooms; equipping wood shop with dust collectors; installing a sprinkler system in the basements of sixty-three nonfireproof buildings as a protection to life and property, mainly the latter, at an average cost of \$2500 per building.

No building, no matter how well built, is entirely free from fire hazards unless those occupying it continually exercise care and diligence in regard to fire prevention. The laboratories using gas and chemicals, the shops where dust accumulates, the boiler room where oil and grease may be left in open receptacles, the coal bin where spontaneous combustion may occur — all these constitute fire hazards which can be eliminated only through the care and diligence of those responsible for the work that is carried on in a building. The keeping of fire-fighting apparatus in prime condition is a necessity. The standpipes and hose must be accessible and in working order at all times, the hand sprinklers must be kept filled with fresh chemicals, and the sprinkler system — if one has been installed — must always be in working order. In addition, all means of escape must be immediately accessible for emergencies, and the occupants of the building should be so drilled that they can leave in an orderly fashion in a minimum of time. With such a program of construction and fire prevention, fire losses will become less year by year.

DETERMINATION OF THE BOARD'S INSURANCE POLICY

The determination of an insurance policy by a board of education and its executive officers is a matter of first

importance. They must consider the interests of the taxpayers in the type of protection afforded and avoid the political entanglements so often present in securing the proper protection. They must study the various kinds of insurance so as to secure adequate protection for a reasonable outlay. They should see that their sound value has been so determined that no serious questions will arise in the event of a loss. And, finally, they must act on the assumption that fire prevention, after all, is the best form of insurance that any school district may carry.

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SMITH, HARRY P. *The Business Administration of a City School System* (Contributions to Education, No. 197). Teachers College, Columbia University, New York; 1926.

Contains a brief study of insurance practices found in twenty-five Eastern cities, together with an evaluation of those practices by insurance experts.

THOMAS, R. H. "Fire Insurance," *Proceedings of National Association of School Accounting Officers, 1918*. J. H. Mount, Secretary of National Association of Public School Business Officials, Trenton, New Jersey.

An address delivered at convention of school business officials, outlining theory and giving data.

— "Fire Insurance in Public Schools," *American School Board Journal*: Vol. 57, No. 3, page 35 (September, 1918).

A good presentation of the whole case of public school property insurance is given here. Insists on districts' carrying their own insurance.

— "Investigation of a System of Appraisal of School Properties," *American School Board Journal*: Vol. 58, No. 6, page 43 (June, 1919).

An investigation of appraisals used in twenty-two cities with an evaluation of each is given in this article. Suggestions of proper appraisal methods.

TRAUTSCHOLD, REGINALD. "School and College Building Fire Losses," *American School Board Journal*: Vol. 71, No. 2, page 108 (August, 1925).

A discussion of fire losses with special reference to decreasing losses due to electricity. Suggestions for improving electrical equipment.

CHAPTER TWELVE

PURCHASING AND SUPPLY MANAGEMENT

THE activities and practices involved in purchasing and managing supplies are so closely interwoven that it is impossible to discuss the one topic without touching upon the other. For example, the purchasing must be preceded by some sort of need, expressed usually in the form of a requisition. This need may have arisen through the depletion of supply of a given article, a fact which is directly related to the storage of supplies. Again, the payment of a claim involves the checking of the invoice with the goods received — an activity performed by the stock clerk in a school system of any size.

That point granted, the procedures should be such as to determine the best materials available for the purposes for which they are to be used, and then to set up such procedures that these materials can be secured on the terms most favorable to the purchaser.

CITY PURCHASING *vs.* SCHOOL PURCHASING

In many fiscally dependent cities a municipal purchasing agent makes all purchases for the municipality, including the city schools. This plan is based on the assumption that the schools constitute a department of the city government. The arguments advanced for such a plan are the following: (1) Purchasing in large quantities makes it possible to get lower prices; (2) transportation charges on large amounts are smaller per unit than on smaller amounts; (3) an expert purchasing agent can be employed; (4) overhead is reduced since one organization, rather than two, handles the purchasing.

The first argument undoubtedly has merit, but aside from fuel and janitors' supplies a large bulk of the school supplies are so highly specialized that their sole use is in the school system. It would seem, then, that it would make little difference from the standpoint of price paid whether the city or the school system makes the purchases.

The second argument has the same merits and defects as the first. It is seriously to be questioned whether any large amount is saved. Because of the specialized nature of the supplies needed by the schools an organization must be maintained to see that the requisitions are prepared for the city purchasing agent in intelligible form. Then, the goods must be received and stored by school employees if they are to be available for school use. It is probable that these same employees will check the invoices. Thus the only saving to the school is the clerical work involved in purchasing and remitting for the invoices.

THE SUPPLY DEPARTMENT

In a school system of considerable size the systematic handling of supplies involves a large amount of work. The items that are requisitioned must be properly checked and purchase proposals must be carefully worked out. When the items ordered are received, they must be checked and carefully stored; inventories must be kept and unit costs computed. Such a program implies that competent individuals must be in charge if both the purchaser and the consumer are to be satisfied. But obviously a separate department increases the overhead expenses of the school system. Hence sound discretion must be exercised in the establishment and handling of this department. It is not difficult through the multiplication of devices, all desirable in themselves, to increase the expense of handling supplies to the point where this cost is equal to a large percentage of the first cost of the materials. Such a condition must, of course, be avoided.

Dr. Taylor, in his book, *Principles of School Supply Management*, suggests that a separate supply department is desirable when the amount of supplies handled exceeds \$25,000 per year.¹ Using the five-year average cost of supplies for four-

¹ Robert B. Taylor, *Principles of School Supply Management*, page 46. (Teachers College, Columbia University, New York; 1926.)

teen cities computed by Dr. Taylor, this would imply roughly an average attendance of ten thousand pupils. Speaking generally, then, a separate supply department should be organized when a city has an average attendance of eight thousand to ten thousand pupils, and above. Cities with smaller attendance should handle their supply department as a part of the work of the central administrative office.

A well-organized supply department will include a purchasing agent and a stockroom clerk — if a central storeroom is maintained — and sufficient clerical help to maintain adequate records, including a continuing inventory. Supply departments of outstanding merit and national reputation are found in many cities. Those of St. Louis, Newark, and Rochester are nationally known.

CRITERIA OF SUPPLY MANAGEMENT

It is highly desirable in all aspects of educational administration to have standards by which the adequacy of one's administrative procedure can be judged. Adequate criteria for many processes are lacking, but Dr. Taylor, who has made a scientific study of supply management, has secured through the expert judgment method a set of criteria for the evaluation of a school system's management of its supplies.¹

I. The board of education should limit its activity to determining policies and exercising broad general control.

II. The board of education should require the superintendent of schools, as its chief executive officer, to assume responsibility for determining the kind and quantity of supplies needed and the purchase and proper distribution of the same.

III. Depending on the size of the system, the superintendent of schools should re-delegate this responsibility and authority to an assistant superintendent in charge of business affairs, responsible to him, or to a purchasing agent responsible to the assistant superintendent in charge of business affairs.

¹ *Op. cit.*, pages 12-13. (Used by permission.)

IV. In the office of the assistant superintendent in charge of business affairs should be centralized all the details of budgeting, purchasing, distributing, and accounting for supplies.

V. The machinery for purchasing and distributing supplies should be simple and efficient, of standard procedure, avoiding unnecessary delay and duplication of clerical work, showing each step of the transaction from source to culmination, and guarding against waste and misuse of supplies.

VI. There should be a permanent and continuing system of accounting which will show readily at any time the quantity of supplies on hand, the quantity distributed, and where used.

VII. There should be a complete record of every transaction so that at any time one may have accurate knowledge of any situation as to appropriations, expenditures, and bills outstanding. The record should be continuous and cumulative.

VIII. All supplies (exclusive of perishable articles) should be purchased on competitive bids, but the assistant superintendent in charge of business affairs should have authority, within limits, to make special and emergency purchases without bids. Such special and emergency purchases should, however, be reduced to a minimum.

IX. The major items of staple supplies in sufficient quantity to meet the needs of the entire year should be found in the various buildings ready for use at the opening of the schools in the fall.

X. Accurate records of consumption of supplies per grade should be kept for each building so as to enable those responsible for the preparation of the annual budget to estimate future needs in terms of enrollment.

XI. Unnecessary duplication of closely related types or items of supplies should be avoided. A standard list of the supplies used in the system should be adopted by the board of education and published. Each item should be accompanied by definite specifications and probable cost, such list to be modified as occasion demands.

XII. Expenditures should be in accordance with budgetary provisions.

XIII. In its work the board of education should function as a whole rather than through committees.

XIV. All records and transactions should conform with legal requirements.

These criteria are self-explanatory and need no further interpretation. They provide for an efficient, smoothly operating organization which will provide the proper supplies when needed and where needed.

DISTINCTION BETWEEN SUPPLIES AND EQUIPMENT

For the purpose of this discussion and for precision in accounting, a distinction between the terms *supplies* and *equipment* is necessary. State school accounting systems have attempted to make a valid distinction largely on the basis of length of service.

For our purpose we shall take the rather more refined distinction set up by Dr. Taylor.¹

Broadly speaking, supplies constitute the small, non-permanent materials (exclusive of textbooks) used for instructional purposes, maintenance and operation of the plant, or janitorial service, which are actually consumed with use. In contrast to this, equipment embraces the larger and more permanent items used in furnishing the school plant and in its maintenance, which are not readily consumed and which require replacement less frequently. A definition of supplies intended to meet more exacting requirements of school accounting follows: Supplies as used in public school systems embrace and are limited to (1) materials consumed or destroyed when used; (2) materials, the normal life of which, when in use, is not more than two years; (3) fragile articles frequently broken with customary usage, and small articles frequently lost under similar circumstances.

Such a definition gives the administrator and his staff a sound, practical working basis and is far superior to the older and less analytical attempts.

CLASSIFICATION OF SUPPLIES

Since, under the definition of supplies just set up, it is evident that materials thus defined will be used in offices, in classrooms, in libraries, in the work of the janitors, and in school repair shops, some classification is desirable. Ob-

¹ *Op. cit.*, pages 4-5. (Used by permission.)

viously, one based on the work actually performed in a school system — that is, a functional classification — would seem to meet the requirements of budgeting, purchasing, storing, distribution, consumption, and accounting. Dr. Taylor has attempted such a classification which we present herewith:¹

- I. General control
 - Office supplies
- II. Instructional service
 - a. General and commercial supplies
 - b. Drawing supplies
 - c. Home economics supplies
 - d. Household arts supplies
 - e. Industrial arts supplies
 - f. Kindergarten supplies
 - g. Music supplies
 - h. Physical-training supplies
 - i. Scientific supplies
 - j. Special-class supplies
- III. Operation of the plant
 - Janitors' supplies
- IV. Auxiliary agencies
 - a. Medical and dental supplies
 - b. Lunchroom supplies
 - c. Library supplies

To this list the writer would add "repair supplies to be used by the maintenance staff." This classification makes relatively easy the compilation of the budget requirements by departments. Purchasing is simplified since dealers tend to specialize along the lines of these divisions. The storage problems are made simpler, and the accounting problems are simplified.

THE PURCHASING AGENT

The first qualification of a purchasing agent is that he be a good judge of quality and price. Without this qualification he can never render satisfactory service. School purchasing involves acquaintance with many highly specialized lines; it

¹ *Op. cit.*, pages 8-10. (Used by permission.)

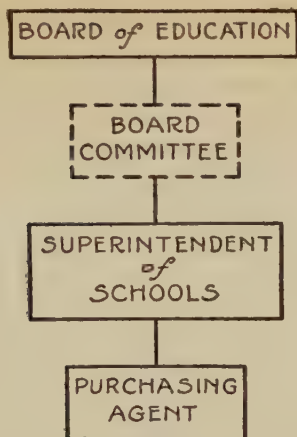


FIG. 17. The proper relationship between the superintendent and purchasing agent. In a large city an assistant superintendent may have direct supervision over the purchasing agent.

is therefore imperative that a school purchasing agent be an expert in these lines. This explains why men trained in municipal purchasing or purchasing for industrial plants are not fully equipped for the position of a school purchasing agent.

A second consideration of prime moment is the relationship of the purchasing agent and the administrative set-up. An earlier chapter has established the principle of unified administration for a city school system with the educational point of view predominating. The "flow of authority" from the chief executive to the purchasing agent must be direct, so that an educational point of view will predominate. Dr. Taylor's criteria suggest for the large system a purchasing agent responsible to the assistant superintendent in charge of business affairs, who in turn is responsible to the chief executive. In a medium-size city where there is no assistant superintendent the purchasing agent should be directly responsible to the superintendent, while in the very small system the

superintendent himself or the clerk of the board working under his immediate direction should do the purchasing. In this way only can the school system be assured of the predominance of an educational point of view.

In Figure 17 is shown the right type of administrative set-up, while Figure 18, taken from the author's *The Business Administration of a City School System*, shows a wrong set-up.

The lack of an educational point of view in the purchasing agent and responsibility to other individuals than the chief educational executive often result in the purchase of cheap and improper supplies. The author quotes from his *The Business Administration of a City School System*:¹

The business executive of City J refused to purchase Patty Hill Blocks for the kindergartens of that city because he insisted that their purchase would lead to other purchases, thus increasing expenses. He also purchased an antiquated edition of a certain textbook requisitioned by the instruction department because it could

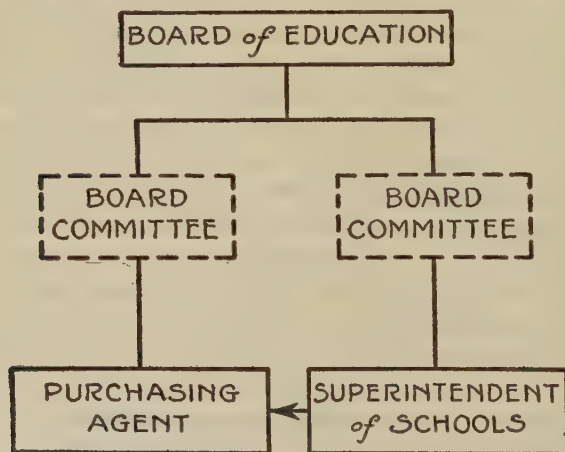


FIG. 18. Improper relationship between the superintendent and purchasing agent as it exists under a multiple plan of organization.

¹ Harry P. Smith, *The Business Administration of a City School System*, page 70. (Teachers College, Columbia University, New York; 1926.)

be purchased at a lower figure, and typewriters for the commerce department which are not ordinarily used by commercial concerns for a similar reason.

The business executive of City B purchased a quantity of stencil sheets for duplicating work. He took a different grade from that specified by the instruction department because of the lower quotation. The sheets proved unsatisfactory, but no action was taken until a large number of principals protested vigorously against having to use them. (Reported to writer on visit to City B.)¹

Another type of organization equally bad is the purchasing of all school supplies by a city purchasing agent, a set-up which is not at all uncommon in fiscally dependent cities. If the school requisitions are honored as they are submitted, the plan may operate satisfactorily. But all too often the lack of an educational viewpoint in the city purchasing agent, the desire to economize, or political ambition may militate against the educational welfare of the school pupils.

CENTRALIZED *vs.* DECENTRALIZED STORAGE

Two plans for storing school supplies are found. One plan provides for a large central storage depot, or warehouse, from which frequent deliveries are made to each administrative unit of the school system. Here the supplies are stored for a long period, and on these stores principals, janitors, and other members of the staff make requisitions from time to time. Regular deliveries are made to every part of the school system. This plan is known as the centralized storage plan.

In the other type there is maintained in each administrative unit a storeroom which is stocked at the beginning of a period — the school year, perhaps — with enough supplies to last the entire period. A small central storeroom is then maintained for any surplus stock and any items not stored in the various units. Deliveries are then made directly to the buildings prior to the period for which the supplies are desired. This plan is known as the decentralized storage plan. There are sound arguments for both plans.

¹See also page 73.

The principal arguments for centralized storage are that by this plan (1) a careful check is kept on each unit so that waste and extravagance are promptly checked; (2) a perpetual inventory is easily maintained; (3) depleted stocks are readily detected and replenished; and (4) principals and their assistants are relieved of much clerical work.

The main arguments for decentralized storage are that under this plan (1) each building, feeling its responsibility for living within its allotment, is more economical in the consumption of supplies than when it can draw on a large central storage depot; (2) supplies are always in the building when needed and it is not necessary to wait for them until delivery day; (3) the political danger inherent in a system of having large quantities of supplies stored in a central depot is eliminated, particularly the pressure to force a political appointment for the stockroom positions; (4) overhead is reduced through eliminating deliveries and care of the storage depot; (5) red tape is eliminated because the periodic requisitions for the checking and receipting of supplies are eliminated; (6) the time of principal, teachers, and janitors is saved since all supplies are delivered to a building, checked, and receipted for at one time rather than at numerous times.

Taylor's criteria, together with frequent utterances of school administration experts, favor decentralized storage. The writer found the two plans almost equally distributed among the twenty-five Eastern cities which he visited.

STANDARDIZED SUPPLY LIST

One of the most important steps in setting up a proper system of supply accounting is the compilation of a standard supply list. Such a list is necessary because in a school system where there are a large number of teachers and janitors the employees will designate different makes of

supplies for the same purpose. For example, many different brands of pencils may be desired for art work when a half dozen would serve equally well.

The items of this list should be standardized both in specifications and in units. Committees composed mostly of the users of these various items should be vested with the responsibility of preparing specifications and determining the unit. But since the users are not always the best judges of quality, they should make use of expert opinion. These lists should be classified according to the scheme presented earlier in this section, and each item should be given a code designation.

After these lists are printed or mimeographed, they are ready for the use of members of the staff. Requisitions can be based on these lists, and the name of an item on a requisition list along with its code designation insures that both the user and the purchasing agent will have the same conception of the article desired. Each year supplementary lists should be prepared, and periodically new lists should be compiled. With such lists in existence it may reasonably be expected that all supplies requisitioned would be selected from these lists.

BUDGETING SUPPLIES

At a specified time preceding the preparation of the annual school budget for submission to the board of education, a budget estimate of the supplies needed by the various departments should be made. This estimate may be prepared either by estimating for each item in a list, such as that suggested on page 272 of this chapter, the sum to be appropriated for each unit of average enrollment; or a list of the various amounts needed may be made and estimates computed for these. The difficulty of the first method is that few if any school systems have standardized the consumption of supplies on a unit basis. Such standardization should, however, be

made by all school systems. The resulting data will greatly facilitate the preparation of the supply budget.

The estimates for instructional supplies should be prepared by those who use them — principals, teachers, and supervisors — and revised by the educational administrative officers of the school system. A definite date should be named on the school calendar for this activity. The period for which estimates are made is usually the fiscal year.

SECURING BIDS

When the supply and equipment lists have been properly determined, it is desirable to secure competitive bids on those items where there may be competition.

The preparation of proposals demands utmost care. Exact specifications should be prepared so that no doubt can exist as to what is desired. At least six main points should be contained in these specifications: period covered by the contract, provision for cash deposit or bidder's bond to insure faithful performance, articles under agreement with specifications clearly stated, quantity of each desired, unit of bid, and delivery conditions. When these forms are prepared, they should be printed or mimeographed so that all bidders receive identical copies.

Bids may be solicited through advertising, through bulletin board notices, or through direct communication with the venders. If the last-named plan is used, the names of venders handling the different supplies can be secured from various trade journals. Every school purchasing agent's office should be supplied with an alphabetical list of dealers and their catalogues. When either of the first two plans mentioned is followed, it is essential that the necessary information reach the venders dealing in the articles wanted.

In many cities it is customary to require the submission of sealed bids with samples clearly marked. A cash deposit or

approved bidder's bond equal to a specified percentage of the amount of the bid is frequently required to insure faithful performance. A reservation not infrequently found is that the board agrees to buy from 90 to 110 per cent of the amounts specified on the bid form; thus some latitude in purchasing after bid forms are prepared is permitted.

AWARDING CONTRACTS

When quotations have been received and opened, they should be tabulated by firms and by items. The firm quoting the lowest price consistent with satisfactory quality should be awarded the contract.

When samples are submitted, marks identifying the bidder should be removed; each sample should be given a code designation; and an individual or committee expert in that item should make the selection.

The reliability of the bidder, the transportation facilities available, the delivery cost, and the ability of the bidder to deliver goods according to terms of the contract should all be carefully considered. In other words, performance and not price should be the determining factor.

Triplicate contracts should be prepared where a school has centralized storage and quadruplicate contracts where the decentralized storage plan is followed. The original should go to the vender, the second copy to the purchasing agent, and the third copy to the auditing department. The fourth copy, in the case of decentralized storage, goes to the person in charge of the stock. The others are handled as in the case of centralized storage.

STORES

Whether collected in one central depot or scattered through the different buildings, certain principles must obtain in the handling of supplies. The fundamental purpose is "having on hand at exactly the right time" the materials needed

“in the right quantity, at the lowest cost consistent with quality.”¹

The organization should be such that every item is accounted for. All items should be rigidly accounted for until they reach the individual under whose direction they are to be consumed, and the records should be adequate enough so that a check is maintained over that individual.

A stores ledger which will record the receipt and withdrawal of all stores is indispensable. It should be of the loose-leaf or card type to insure flexibility and ease of manipulation. This will provide a perpetual inventory (see Form 21 in Appendix). The storage space, whether centrally located or in separate buildings, should provide adequately for proper receipts of items so that accurate checking is possible; adequate storage conditions, including accessibility and protection against destructive agencies; and ease and rapidity of distribution so that articles can be secured quickly and easily when the need arises.

RECEIVING GOODS

The storekeeper or stock clerk receives all goods consigned to the building or depot. He should check the goods against the delivery ticket accompanying the goods and against the purchase order (see Form 10 in Appendix), a copy of which should have been sent from the central office. Some systems do not indicate in the copy of the purchase order sent to the stock clerk the quantity of each item, believing that this plan leads to a more careful count on the receipt of the goods.

In either event any shortage in quantity or failure to supply goods of the quality specified should be reported so that payment will not be made for shortages or for goods of inferior quality. This phase of the supervision of supplies should be handled promptly to avoid improper payment.

¹ H. H. Farquhar, *Factory Storeskeeping*, pages 23 ff. (McGraw-Hill Book Company, New York; 1922.)

HANDLING INVOICES

The date of receipt of the invoice should be stamped or noted upon its face as soon as it is received. The items thereon should be checked with the goods received, either by sending the invoice to the individuals responsible for receiving the goods or by having them report the goods received on a duplicate of the purchase order or contract form. All items should be checked for accuracy.

If possible, the voucher form of the school district should be used by the vender, particularly if the state law requires a certification before a notary (see Form 1 in Appendix). If possible, the purchase order and the voucher form should be so constructed that one impression on a typewriter will fill out the purchase order and its duplicate forms as well as the vender's invoice on the voucher form. The vender would then enter the prices, make the extensions, compute the total, and add his certification.

PAYING CLAIMS

After checking, the recording and vouchering of the invoices should be executed promptly, and payment made without delay. In this way the school district will be enabled to take advantage of any discounts that may be offered. Furthermore, the credit of the school district is strengthened by prompt payment of claims.

This implies close coöperation between the supply and the auditing departments. The former must furnish a copy of every purchase order promptly so that a complete file of encumbrances can be kept. On receipt of invoices the auditing department should be equally prompt in turning the proper data over to the supply department to be checked. The latter must then see that the checking is done expeditiously to insure prompt payment of obligations.

Payment should be made by voucher check (see Form 11 in Appendix), the number of such check being entered on the voucher form (see Form 1 in Appendix) and in the voucher register (see Form 2 in Appendix). Payment in this form produces an automatic audit between voucher and check, it gives the vender an exact statement of what is being paid for, and it secures a receipt from him when endorsed and paid. Protection should be afforded the district, of course, through the use of check-writing and protecting machines if the business of the district justifies. Nor should payment be delayed until a meeting of the board at which the claim is allowed. The proper agent of the board should be authorized to make payment on certification and receipt of goods, the budget appropriations and authorization of the board and its executive officers constituting the proper authority for such procedure.

The auditing department should check the balances in the controlling accounts and report immediately when a balance becomes dangerously low. If accrual accounting is practiced, the system operates automatically to give this information. In addition, periodical statements of all balances should be rendered the proper executive officers of the board preferably a few days before the regular board meetings.

STOWING SUPPLIES

It is not the purpose of this treatise to specify the exact methods of stowing which are most satisfactory. Its purpose is rather to lay down certain basic principles which, if followed, will insure ease in stowing and withdrawal, and at the same time will insure careful preservation of the goods. For specific plans used in various cities the reader is referred to the bibliography at the end of this chapter. The following rules by Professor Dohr are worth careful consideration:¹

¹ J. L. Dohr, *Cost Accounting — Theory and Practice*, page 296. (Ronald Press Company, New York; 1924.)

1. All goods must be piled uniformly and neatly. Such piling facilitates the issuing of goods and their accounting and inspection when an inventory count is desired. So far as possible the goods should be piled to indicate their own count in columnar rather than pyramidal piles. A uniform number of articles should be kept in each pile with a last pile for the odd lots on hand.

2. Goods should be stowed only in designated storage spaces. Window sills, ledges, floors, and aisle spaces should not be used for storage space unless so provided in the storage rules.

3. Cases and crates of large size are placed on the floor. Small boxes, packages, and supplies should be placed in bins; articles of unwieldy length, like iron pipes, are to be placed in racks.

4. All goods must be so placed in storage as not to injure them. Sheets of paper should be piled flat and brooms should stand on the handle end. Articles should not be stowed so as to project from the bin.

5. Wherever possible the goods issued should be from the oldest lot first.

6. Stowing in multiples of five or ten will facilitate counting at inventory time.

7. Wherever possible, goods should be piled in a uniform manner. Thus, in the bins, begin in the back left-hand corner and pile out toward the front. After completing one row begin the next, and so on until the bin is filled. In issuing, begin with the row to the left so that the oldest goods will be used first.

8. Every full column of goods should have the same number of articles and every full row should have the same number of columns. Only the last row and column may remain incomplete and contain odd quantities.

9. Articles with defective wrapping should be placed first so they will be used first.

DISTRIBUTION OF SUPPLIES

Withdrawal from storage should be on the basis of a written requisition only (see Form 9 in Appendix). If the stores are in the building, duplicate forms will suffice — one for the stock clerk and one for the individual who issues the requisition. If there is a central supply depot, the requisition should be in triplicate and the additional copy should be returned

with the supplies to serve as a delivery slip and receipt. The requisitions retained by the office will serve as charge slips against the room or department concerned.

Great variation in the plans by which supplies are distributed is evident. The following table from Taylor shows the length of time one distribution is supposed to cover :¹

TABLE 31
PERIOD COVERED BY ONE DISTRIBUTION

PERIOD	NUMBER OF CITIES
One year	7
One-half year	1
One-third year	2
One-fourth year	2
One month	1
As needed	1
Total	14

APPORTIONMENT OF SUPPLIES

Neither Dr. Taylor nor the writer found in his investigations any standards in apportioning supplies. The judgment of the principal or the teacher is the only check to guarantee economy. So far as janitors are concerned, the amount of supplies used by them is frequently determined by their judgment alone.

In the absence of scientifically determined standards each school system might establish its own norms based on averages or percentiles for a given period and attempt to hold pupils, teachers, and janitors to those norms. Meanwhile the records should be so kept that undue extravagance can be checked.

¹ R. B. Taylor, *Principles of School Supply Management*, page 22. (Published by Teachers College, Columbia University, New York; 1926. Used by permission.)

EMERGENCY PURCHASES

It is impossible to anticipate all needs so completely that no emergency purchases are necessary during the fiscal year. The need for these will usually originate in the stockroom or with some employee of the district. The storekeeper or other proper employee should submit a requisition requesting the article needed. If it is requisitioned from the standardized list, no other description than the name and code designation is necessary. If, however, the item is not on that list, then an accurate description with perhaps the catalogue number and name and address of the vender is imperative.

On receipt of this requisition the purchasing department will secure competitive bids (see Form 20 in Appendix) if the size of the purchase justifies, or will issue purchase order immediately on some vender if competitive bids are not secured. The procedure of receiving the goods certifying the invoice for payment and paying the claim will be identical with the steps outlined earlier.

CURRENT PRACTICES IN SUPPLY MANAGEMENT

Since an investigator has set up criteria for evaluating systems of school-supply management and has applied these criteria to several cities, it is possible to give here the poorest practice found on the basis of these criteria, the best practice, and, in the light of his entire investigation, the proper plan to be followed.

Figure 19, reproduced from Taylor,¹ shows the poorest plan found, judged by the criteria adopted. The following description indicates the procedure. The lettering of the diagram, together with the system of lines and arrows used, represents it graphically.

All requisitions for supplies are made in the office of the superintendent of schools; estimates are based on records of previous years

¹ *Op. cit.*, page 36. (Used by permission.)

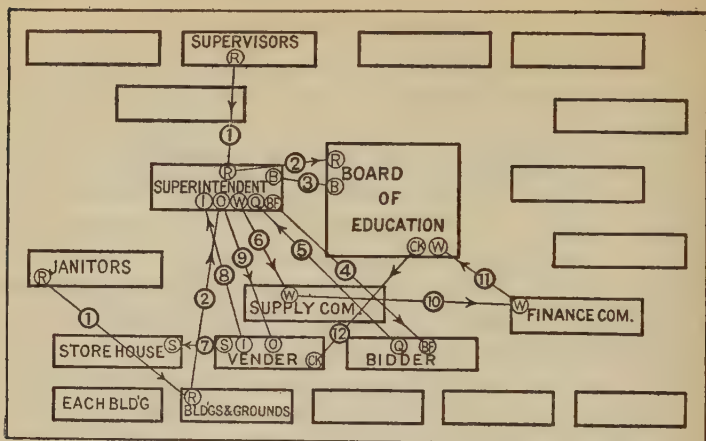


FIG. 19. A poor set-up for the purchase and management of supplies.

R — Requisition
B — Annual estimate budget
BF — Bid form
Q — Quotation
O — Purchase order

I — Invoice
S — Supplies
CK — Check
W — Warrant

and consultations with special-subject supervisors. The budget estimate for supplies is based on this compilation.

Bid forms are prepared in the superintendent's office and sent to bidders. Quotations are received. Orders are placed by items, and supplies are delivered to the administration building. Deliveries to the schools are made monthly, based on requisitions from the teachers submitted by the principals.

Invoices and bills are checked by the superintendent's office and signed by the superintendent. The bills are approved and signed by the committee on textbooks and supplies and the finance committee. The "order to pay" is voted at a regular meeting of the board. The secretary draws and signs the check which is also signed by the president and treasurer of the board.

Figure 20,¹ on the other hand, represents the best practice found in a series of cities on the basis of the criteria adopted:

After conferences with teachers, the principals prepare annual requisitions which are sent to the purchasing agent. Janitors'

¹ *Op. cit.*, page 39. (Used by permission.)

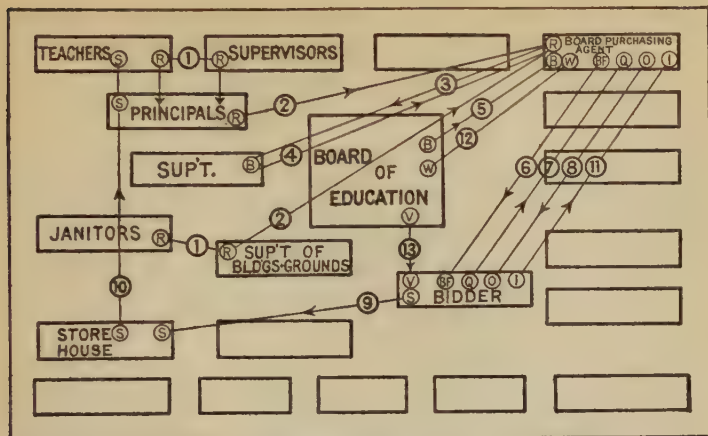


FIG. 20. A commendable set-up for the purchase and management of supplies.

R — Requisition
 B — Annual estimate budget
 BF — Bid form
 Q — Quotation
 O — Purchase order

I — Invoice
 S — Supplies
 V — Voucher
 W — Warrant

requisitions are sent to the superintendent of buildings and grounds and by him to the purchasing agent.

The annual budget estimate is prepared in the office of the purchasing agent and approved by the board of education.

Bids are requested by the purchasing agent and orders placed, usually according to bids on department totals. Supplies are sent to a central warehouse and distributed to the school buildings during the summer vacation.

Invoices are checked by the purchasing agent and approved. The total of bills approved is presented to the board of education and ordered paid. Checks are drawn by the secretary and signed by the president, treasurer, and secretary.

Figure 21¹ shows the plan proposed by Taylor for handling supplies adequately. This plan is the result of the study of the plans in use in many school systems, together with an application of certain principles followed in industrial establishments.

¹ *Op. cit.*, page 85. (Used by permission.)

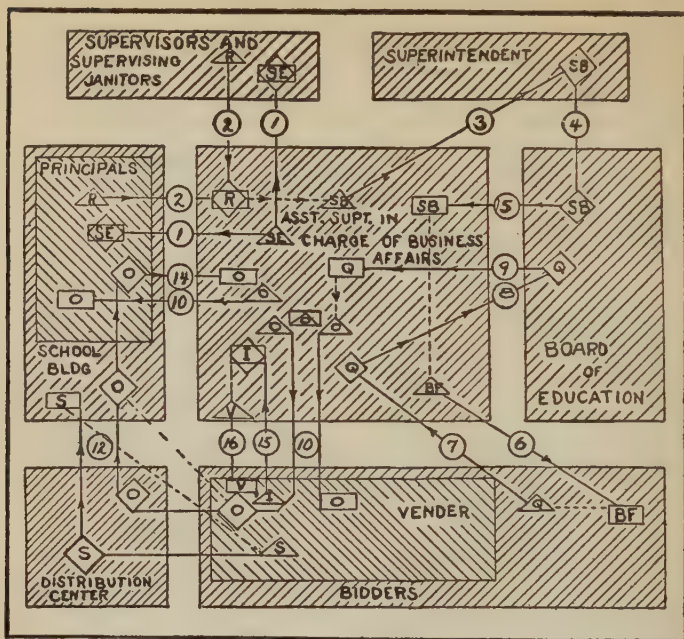


FIG. 21. An ideal set-up for the purchase and management of supplies.

SE — Supply estimate
 R — Requisition
 SB — Supply budget
 BF — Bid form
 Q — Quotation
 O — Purchase order
 S — Supply items

I — Invoice
 V — Voucher
 → — Direction and order of transaction
 △ — Source
 ◇ — Approved or checked
 □ — Destination

Taylor gives the following explanation of this figure :

An estimate of the supplies required [supply estimate] is prepared by the assistant superintendent and submitted to principals and supervisors for approval or suggested modification. As approved, this becomes the principals' and supervisors' requisition and is returned to its source. From these requisitions the assistant superintendent prepares the supply budget which is submitted to the superintendent and board of education for approval. The supply budget is arranged in bid form and submitted to the bidders with

request for quotations. The tabulated quotations are submitted to a committee for examination and confirmation of the purchase orders. Purchase orders are prepared in quadruplicate. One copy is sent to the principal, one is retained by the assistant superintendent, and two copies, one of which must accompany the shipment of supplies, are sent to the vender. This copy, approved by the principal after the supplies have been received, is sent to the assistant superintendent and compared with the invoice. If the invoice and bill are correct, a check is drawn in payment and sent to the vender.

TEXTBOOK MANAGEMENT

The principles which have been outlined for supply accounting hold in the main for the management of textbooks, whether free textbooks, supplementary books, or library books. They should be selected with usability rather than economy in purchasing the criterion. The technique to be followed in making such selections is highly professional and outside the scope of the present work. The requisitions should be submitted, as in the case of supplies, on the basis of carefully prepared estimates. They must be prepared far enough in advance for consideration in connection with the budget.

The purchasing technique is identical with that followed in supplies. Lists of publishers will be kept on file; purchase orders issued; invoices checked, paid, and filed; and requisitions on stocks issued as outlined above for supplies.

Like supplies, textbooks should be in the proper storerooms in ample time and in a quantity sufficient to supply the pupils of the school system. An adequate system of records should be kept so that books are charged to the proper divisions. They should be such that any book belonging to the schools can be traced immediately to the proper building and pupil. Adequate safeguards for the proper care and preservation of books should be set up and maintained.

THE FUEL SUPPLY

The large sums expended for fuel each year, together with the complicated procedures involved in purchasing it on a competitive basis, make it necessary to treat this topic independently of the purchasing of supplies and equipment in general. The purchasing of this commodity involves the preparation of specifications for competitive bidding, as well as testing and delivery.

The preparation of specifications in view of the wide range of possibilities both with coal and with fuel oil is a highly technical process, and should be drawn, if possible, with the aid of a fuel expert who is not only familiar with the various kinds of fuel and competent to test and analyze them, but one competent also to make a thoroughgoing examination of the heating plants and an accurate determination of the most suitable fuel for use in them. This procedure will determine as accurately as possible the kind of fuel to be used by each heating plant.

The specifications for fuel should be reduced to written form. They should include the amount of each kind of coal desired, the minimum number of heat units per pound, the maximum amount of ash and volatile matter per unit, and the price per ton as delivered in the coal bunkers. The specifications should also provide a penalty for all coal that does not measure up to specifications and conversely a premium for all coal exceeding the specifications. In the event that a school system cannot make the necessary tests or analyses, it is good practice to designate the location of the mines from which coal will be accepted, the analyses for the product of the different mines being available as a rule.

Two methods of testing are employed: (1) A chemical analysis of samples selected at random from the entire lot of coal delivered should be made; and (2) controlled runs of a

heating plant equipped to measure the results of the fuel, using samples of the coal selected at random from the coal delivered, should be made. Both methods are used by city school districts to some extent. Such procedure will insure a satisfactory return on the money invested in fuel.

The delivery of the coal should be so safeguarded that the school district actually receives all it contracts and pays for. The most common practice is to have the coal weighed over sealed scales, the janitor receiving the weight ticket at the time the coal is delivered in the bunker; thus it is practically impossible for the coal to be delivered elsewhere than to the school building designated.

The procedures outlined for controlling the purchase of coal hold in general for the purchase of fuel oil, since there is considerable variability in the heat units secured from this type of fuel also.

CONCLUSION

Supplies and textbooks represent money invested. Until they have served every purpose of which they are capable, however, the worth of the money invested in them has not been realized. The application of this principle to their accounting means that they should be managed as carefully as the money itself. Waste and extravagance are to be avoided, and due diligence exercised in their preservation to the point of maximum use.

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— "The Legal Status of the Purchase of School Supplies," *American School Board Journal*: Vol. 57, No. 1, page 32 (July, 1918).

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STRAYER, GEORGE D., and ENGELHARDT, N. L. *School Records and Reports*. Teachers College, Columbia University, New York; 1923.

Lists desirable records, including those necessary for supply accounting. Includes score card.

STRAYER, GEORGE D., and others. *Report of the Survey of Certain Aspects of the Public School System of Springfield, Massachusetts (School Year 1923-1924)*. Teachers College, Columbia University, New York.

Outlines supply management as found in Springfield, Massachusetts.

— *Report of a Survey of the Public School System of Atlanta, Georgia (School Year 1921-1922)*: Vol. II, pages 30-34. Foote and Davies, Atlanta, Georgia.

Describes the operation of the school supply department of Atlanta, Georgia.

— *Report of the Survey of the Public School System of Baltimore, Maryland*: Vol. II, pages 34-44. Board of School Commissioners, Baltimore; 1921.

Describes methods of supply management in Baltimore.

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Includes a detailed study of supply accounting found in sixteen eastern cities; sets up criteria of effective system and outlines one. Thoroughly scientific.

CHAPTER THIRTEEN

PLANNING A SCHOOL BUILDING PROGRAM

DURING recent years much thought has been given to city planning. Parks have been laid out, boulevards have been established, and zones have been designated within which only certain types of residences or industrial establishments can be erected. In many cities these plans have been carefully prepared by experts and have been realized only after long periods of time. In contrast with this systematic planning of a city as a whole, the school plant has, like Topsy, in far too many instances, "just grewed." School buildings have been erected with more regard to political pressure than to a realization of any actual need. They have been located with little consideration of future growth or educational aims since there has often been a greater interest in property than in children. The plan of financing these buildings has also borne little relation to future needs of the community.

But a change is taking place in the attitude of people toward their school plant, and this change is resulting in a school planning movement comparable with city planning. Many cities are attempting now to plan their school plants for a period of years with reference to the various factors that are always involved in any serious attempt to meet the situation existing in connection with the educational system of any growing community. Not a few cities are inviting experts in the field of school building programs to survey their needs and to outline building programs that ultimately will give their communities the school plants they should have. In turn, experts are being developed in this field — men who understand modern education and who are trained to plan building programs after a careful study of all the facts.

In the past it has been assumed that an architect — frequently any architect — was qualified to plan a school building. But boards of education and school administrators are

discovering that the proper planning of the units of an adequate school plant is the work of a school planning expert who has been trained in the specific technique of developing school building programs. The function of the architect in this procedure is to give in the form of working drawings and specifications the plans worked out by this expert.

FACTORS INVOLVED IN A SCHOOL BUILDING PROGRAM

In general, there are six fundamental factors which must be considered in the adequate planning of a school building program. They are: (1) the character of the city, involving a careful study of its population; (2) the educational program; (3) the policy of school organization; (4) the status of the existing school plant with reference to its usability in the light of the educational program outlined; (5) the ultimate school plant; (6) the ability to finance a building program. Each of these factors will be analyzed at some length in the following sections of this chapter.

Character of the city and its population. To determine the future school building needs of a city, a careful analysis of many factors must be made. These include the growth of the city, the composition of its population, the shifting of the population within the city, its topography, and its industries. Such analyses are made by public service corporations as a basis for their policies, and school building policies require equally careful work on the part of school boards and administrators.

It is necessary to consider the change in population over a relatively long period of time. For this purpose a number of sources have been utilized. These include, in part, state and Federal census figures on persons, families, and dwellings; city directory data; population data collected by public service corporations — telephone, water, gas, and electric power companies; dwelling permits; land additions; and com-

muters, in the case of suburban areas. Many others may be utilized. Obviously, however, those that show too great divergence from the central tendency of all the factors combined should be used with great caution.

The majority of American cities are growing at a reasonable rate only; that is, at a rate of increase of not more than 32 per cent in a decade.¹ Some few, notably Los Angeles, Tulsa, and Detroit, have increased more rapidly. Others, like St. Joseph, Missouri, and Lawrence, Kansas, are relatively static. Still others may be retrogressive. The determination of the type of city and the rate of population growth are of paramount importance.

Recently a new method of forecasting school population has been devised by Dr. Fred Engelhardt.² The basic assumption underlying his technique is that ultimately any community tends to reach the saturation point in population. Its industries and other enterprises develop to the point where the territory served by the city will support no additional expansion. The curve of population tends to flatten out as the city grows older, the percentage of increase becoming much lower than in the early days of the city. A population prediction can be made by means of this technique if the population for several decades is known.

It is probably wise to point out that the use of any prediction technique must be accompanied by a careful consideration of factors that might tend to change the situation suddenly and materially, such as the discovery of oil, the sudden expansion of an important industry, or the loss of the leading industry of the city. No forecasting, however refined, could account adequately for changes due to the operation of such factors.

¹ N. L. Engelhardt, *A School Building Program for Cities*, page 2. (Teachers College, Columbia University, New York; 1918.)

² Fred Engelhardt, *Forecasting School Population*. (Teachers College, Columbia University, New York; 1925.)

The prediction of child population should receive treatment separate from that applied to the prediction of adult population. The ratio of child population to adult population varies from city to city, and may by no means be constant even over an entire city. Such measures as average school attendance, average school enrollment, total enrollment, school and pre-school census figures, and child population in the state and Federal census may be used. It cannot be too strongly urged that a permanent continuing school census be established and maintained, showing the location of school children and children of school age by blocks.

The character of the people themselves must receive consideration. An industrial center with a large factory population will have one type of educational problems, and an educational center built around a great university will have another type of educational problems. In the former city the need for part-time schools, vocational classes, and night schools will be acute; in the latter these needs may sink into insignificance compared with the demand for work of the purely academic type. In the former, children may tend to leave school early to enter the industries; in the latter, a very large percentage may continue through high school, making the housing and instruction of pupils of secondary school age an acute problem. Again, a community purely agricultural will have needs differing from those of a manufacturing center.

The shifting of population within a city must be studied. New residence areas are being added to every city from time to time. Older residence areas are being transformed into business or industrial districts. Spaces occupied by individual residences are becoming apartment house districts. Sections once thickly populated with school children are being transformed into boarding and rooming house districts with relatively few children of school age.

In cities where certain races are segregated in separate schools the population in entire areas may change over a given period of time so that schools for one race must be abandoned and new schools for the other races opened up. These various changes may be studied by using certain factors. Among these factors are lists of voters registered by wards, dwelling permits issued, telephone extensions, changes in elementary school attendance and in school census figures, land additions to the city, and present and proposed factory sites. In the larger cities the area to be studied must be broken up into smaller units, since some will have decreased or remained static, while the city as a whole may show small increase and certain areas within its borders marked increases.

The Bell Telephone System has probably made the most thoroughgoing forecasts of population growth.¹ Their studies, which are being made continuously, are based upon a mathematical analysis of the Federal census data and thorough population and economic studies that have been made locally. House-count surveys are made in each city and by counties in the rural sections. Then local studies are coördinated with the studies made in the central offices, the trends developed by the latter being modified by the data received from the local surveys.

The findings of the Bell Telephone System have frequently been placed at the disposal of school administrators. The Philadelphia, Baltimore, and Atlanta surveys used these data, and various modifications of this technique have been adapted by superintendents for the solution of their local problems.

Figure 22² shows by different hatchings indicated in the key changes taking place within a single city.

¹ F. H. Sterns, "Population Estimating," *Bell Telephone Quarterly* (January, 1924).

² *Report on Grade-Crossing Elimination*, page 45. (Distributed by Office of City Engineer, Syracuse, New York; 1927.)

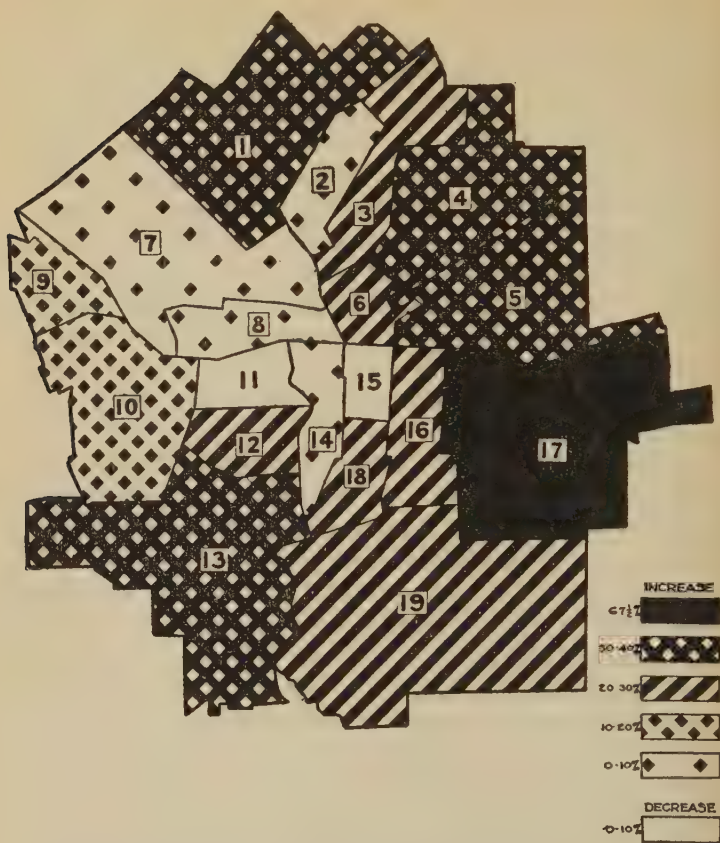


FIG. 22. Population changes in Syracuse, New York, 1915-1925.

On this point Packer says, "The real unit for any thorough planning must eventually be based on a block census which is continuing, and must be ready and available for use at a moment's notice."¹

¹ Paul C. Packer, "A School Building Program," *American School Board Journal*: Vol. 64: No. 1, page 55 (January, 1922), No. 2, page 45 (February, 1922).

The program of education. Before proceeding to the planning of a school building program in detail, it is imperative that the city determine its program of education. If this is not done adequately, a city may find itself confronted with improvising quarters for educational activities for which specific provisions should have been made. Not so many decades have passed since school buildings housing nests of classrooms were ample for all public educational purposes. The elementary curriculum was limited to the "three R's" while the secondary schools offered only the subjects accepted by colleges and universities for admission. But today a greatly enriched curriculum demands specialized buildings, specialized rooms, and specialized equipment. Only the most careful analysis of all aspects of a city's educational situation will suffice to show the types and number of each required.

Obviously, the first step is to consider the aims of education as we conceive it today, and the degree to which the community desires to realize each aim. Many educational philosophers and groups of professional educators have stated such aims. But for the purpose of schoolhouse planning, two such statements, in the judgment of the writer, serve the purpose admirably. The first statement was formulated by the Commission on the Reorganization of Secondary Education.¹ While these aims were formulated primarily for secondary education, yet they are equally applicable to the educative processes involved below and above the secondary schools. The aims are health, mastery of the fundamental processes, worthy homemaking, vocational training, worthy use of leisure, citizenship, and ethical character. These are few in number and easily understood by a large majority of

¹ National Education Association Commission on the Reorganization of Secondary Education, *Cardinal Principles of Secondary Education* (Bulletin, 1918, No. 35, of the United States Bureau of Education).

the intelligent people of any community. It is not difficult to interpret a modern school building plan to a community in terms of these aims.

Dr. Franklin Bobbitt of the University of Chicago has recently formulated another set of aims hardly less noteworthy than those just outlined. Several of these can be definitely identified with the foregoing. His aims, ten in number, analyzed as activities, are the following:¹

1. Language activities — social intercommunication.
2. Health activities.
3. Citizenship activities.
4. General school activities — meeting and mingling with others.
5. Spare-time activities, amusements, recreations.
6. Keeping one's self mentally fit — analogous to the health activities of keeping one's self physically fit.
7. Religious activities.
8. Parental activities — the upbringing of children, and the maintenance of a proper home life.
9. Unspecialized or non-vocational practical activities.
10. The labors of one's calling.

Any adequate planning for a school building program must take into account these aims of education. If an elementary school building is to be erected, for example, its schedule of rooms must be planned with reference to the objectives that are applicable to the elementary school period. A secondary school plant must consider all the objectives that are applicable to that part of the school system. Table 32 shows the author's conception of the application of the first set of objectives to a school system having a six-year elementary school, a three-year junior high school, a three-year senior high school, and a two-year junior college.

A rural community, for example, may offer only agriculture and farm mechanics, whereas an industrial center of one

¹ Franklin Bobbitt, *How to Make a Curriculum*, pages 8-9. (Houghton Mifflin Company, Boston; 1924.)

hundred thousand people will probably omit these lines entirely, but will emphasize printing, commerce, pattern making, drafting, machine shop practice, and auto-mechanics. A textile center may emphasize specific training for the textile mills. The building program, if planned adequately for the realization of the vocational aim, will be different in such different communities.

Broadly speaking, then, careful curriculum planning in terms of aims and specific activities must precede the formulation of a building program. This may be so simple that the local school board and administration will have no difficulty in determining the future program of education. But, on the other hand, it may be so complicated that it requires the combined efforts of the local group and educational experts to formulate the program. In the former it may include only an eight-year elementary school and a four-year high school with an agriculture department; in the latter it may include kindergartens, elementary and secondary schools, a junior college, continuation school, and night schools with most

TABLE 32

CARDINAL AIMS APPLICABLE TO VARIOUS DIVISIONS OF PUBLIC SCHOOL SYSTEMS¹

EDUCATIONAL OBJECTIVE	SIX-YEAR ELEMEN- TARY SCHOOL	THREE- YEAR JU- NIOR HIGH SCHOOL	THREE- YEAR SE- NIOR HIGH SCHOOL	TWO-YEAR JUNIOR COLLEGE
Health	*	*	*	*
Mastery of the fundamental processes	*	*	*	*
Worthy homemaking		*	*	*
Vocational training			*	*
Worthy use of leisure	*	*	*	*
Citizenship	*	*	*	*
Ethical character	*	*	*	*

¹ The asterisks indicate that the objectives designated are definitely applicable to the division of the school system under which they are found.

elaborate provisions for many lines of trade and industrial education.

In addition to making provision for the realization of the aims of education, a city must think in terms of the specific educational activities to be emphasized. The health activities, for example, include not only those designed to prevent disease and promote good health, but those aimed at increasing physical vigor. Such a range includes not only clinics but playrooms, gymnasiums, dressing rooms, adequate playground space, and specialized equipment. The homemaking aim implies the development of special rooms for the promoting of the specific skills necessary to the consummation of that aim. To give vocational training involves a careful analysis of community activities to determine what vocational activities are to be emphasized.

The policy of school organization. After a board of education has studied the character of the city and its population and has determined the program of education to be developed, it is necessary that it settle upon its fundamental policy of school organization before it plans an extensive building program. If a district desires an eight-year elementary school followed by a four-year high school, one building program will be in order; if, however, it desires a six-year elementary school followed by a six-year high school, quite another will be required; while the six-three-three plan would necessitate a third distinctly different from the other two. A junior college adds still another complication; while a city planning for public kindergartens must provide additional elementary school facilities.

In a large city the adoption of such an organization policy not only determines the details of new construction, but it may involve extensive changes in the existing plant. The adoption of the platoon type of elementary school, for example, may require the addition of many special rooms to

the elementary school buildings of the city. Or the inclusion of junior high schools where the eight-four organization has prevailed may involve not only extensive new construction but much remodeling of existing plants.

TABLE 33

DIFFERENT COMBINATIONS POSSIBLE IN A BOARD'S ORGANIZATION POLICY

		ELEMENTARY SCHOOL	SECONDARY SCHOOL	JUNIOR COLLEGE
1.	Kindergarten	8-Year	4-Year	
2.	Kindergarten	8-Year	4-Year	2-Year
3.		8-Year	4-Year	2-Year
4.		8-Year	4-Year	
5.	Kindergarten	6-Year	6-Year	2-Year
6.	Kindergarten	6-Year	6-Year	
7.		6-Year	6-Year	2-Year
8.		6-Year	6-Year	

Four other combinations are possible. These would be identical with Numbers 5, 6, 7, and 8 in Table 36 with the exception of the six-year secondary school period which would be subdivided into a three-year junior high school and a three-year senior high school.

Table 33 shows that no fewer than twelve different combinations are possible in a board's organization policy with no consideration given to night schools or vocational schools. It is thus evident that a board should settle this issue prior to planning an extensive building program. If a city proceeds to add unit after unit without reference to the type of organization it is to adopt, it may have on its hands several different combinations. Such a situation is apparent from Packer's presentation of the Detroit situation. This is shown in Figure 23¹ where twenty different combinations prevailed in

¹ From Paul C. Packer's "A School Building Program," in *American School Board Journal*: Vol. 64, No. 1, page 55 (January, 1922). (Used by permission.)

TYPES OF ORGANIZATION

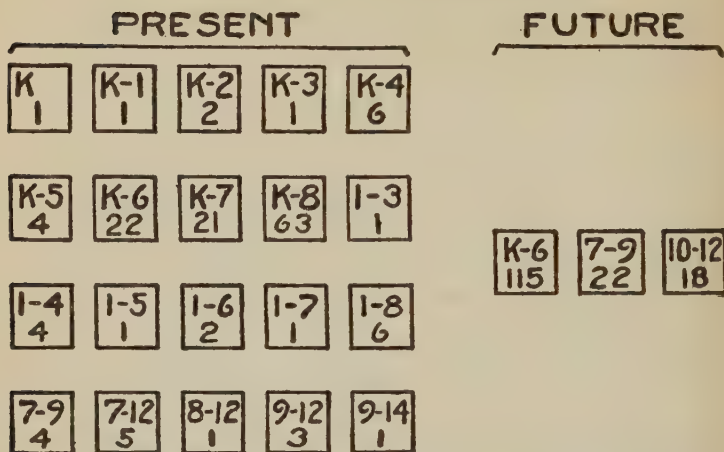


FIG. 23. Present and future types of organization for Detroit, Michigan.

the Detroit school system before the city adopted the present plan of organization. After the kindergarten-six-three-three policy was officially adopted, the problem was simplified by the substitution of a single combination for twenty.

It is not the intention of the writer to argue at this point for any one type of organization. It is rather his purpose to urge the settlement of this question by a board and community before, rather than after, an extensive building program has been launched. While the physical plant does not constitute the most important factor in the educative process, yet it may limit and circumscribe educational activities to a marked degree.

The status of the existing school plant. All units in a school plant, be it large or small, must be carefully coördinated to realize the aims of education previously set forth. Some of the units may be old and antiquated while others are new and

up to date. Those that are old must sooner or later be replaced by new and modern units. Others not so old may by remodeling be made to serve a useful purpose in the program of education. To determine what buildings should be "scrapped" and what ones should be retained and remodeled frequently presents a formidable problem.

Assistance may be secured in the answering of these questions by the use of a school-building score card. This device enables one to study every detail of construction and equipment in the light of the standards that are now commonly accepted. The advantage of a score card is that each of the items considered important is given separate consideration, and a proportional allowance of the total possible score is allotted to each one. "When the ratings of a number of school buildings either in the same locality or in different communities are compared, the fact that the score card listings have necessitated that the same relative weight be given to similar items of construction or equipment in each building insures a degree of fairness and accuracy not obtainable under any other method now employed in judging school buildings."¹

This score card takes into consideration such important items as site and environment, gross structure, classrooms, special rooms, and service systems — plumbing, heating, ventilating, and the like. With each one of these evaluated separately it is possible to say in what respects a building is deficient and from those data to determine what remodeling should be done. If a building is deficient in special rooms, it may be possible to provide them; if it is lacking in service systems, those may be added; if the site is too small, an addition may be possible.

¹ N. L. Engelhardt, *A School Building Program for Cities* (*Contributions to Education*, No. 96), page 56. (Teachers College, Columbia University, New York; 1918. Used by permission.)

A detailed set of standards accompanies the score card, with the aid of which the score on each item is made. It has been found that the composite judgment of three competent judges is for all practical purposes as accurate as that of five judges.¹ The significance of building scores thus obtained is indicated by the following quotation from Engelhardt :²

Experience resulting from these applications of the score card, involving approximately 225 buildings, suggests that a score of 900-1000 indicates a highly satisfactory degree of construction and equipment. In fact, in only a few minor respects does such a building deviate from acceptable standards. A rating between 700 and 900 points is fairly satisfactory. It should be studied in the light of its component parts. Slight building alterations, the need for which will be indicated by the low percentages of the possible maximal allowances on various of the eighty-eight subdivisions, will tend to raise considerably the score of a building of this group. A score of 600 to 700 points has meant, as experience in these surveys points out, that considerable alteration was needed before buildings could be brought to a satisfactory standard of efficiency. Buildings that have scored 500 to 600 points have proved to be highly unsatisfactory and yet not so far gone but that extensive repairs and replacements could make them reasonably habitable. When the scores of buildings have fallen below 500 points, it has been the universal judgment of those who have applied the score card that speedy abandonment of the building for school purposes was the only justifiable course to be followed. In all instances where scores of 500 or less have resulted, it has seemed that expenditures for repairs would be highly excessive. It has also seemed that there was little possibility, even with the expenditure of relatively large sums of money, to secure as a result of such repairs a building which was suitable for school purposes in the modern sense.

It is possible, then, to determine the sequence of replacement of the older buildings. Those with the lowest scores will ordinarily be first in order of replacement, the order

¹ Engelhardt reports that five judges rated the school buildings of Paterson, New Jersey, in 1918. A correlation of +.98 was found by the Pearson product-moment formula between the composite rating of the first three judges and the composite rating of the entire five.

² *Op. cit.*, page 57. (Used by permission.)

depending roughly on the rank of the score when arranged from lowest to highest. Suppose, for example, a city has fifteen buildings, none of which score 600 or above, of a possible maximum score of 1000, while six have the following scores: 325, 382, 406, 450, 475, 520. Unless some very good reason exists for doing otherwise, the building scoring 325

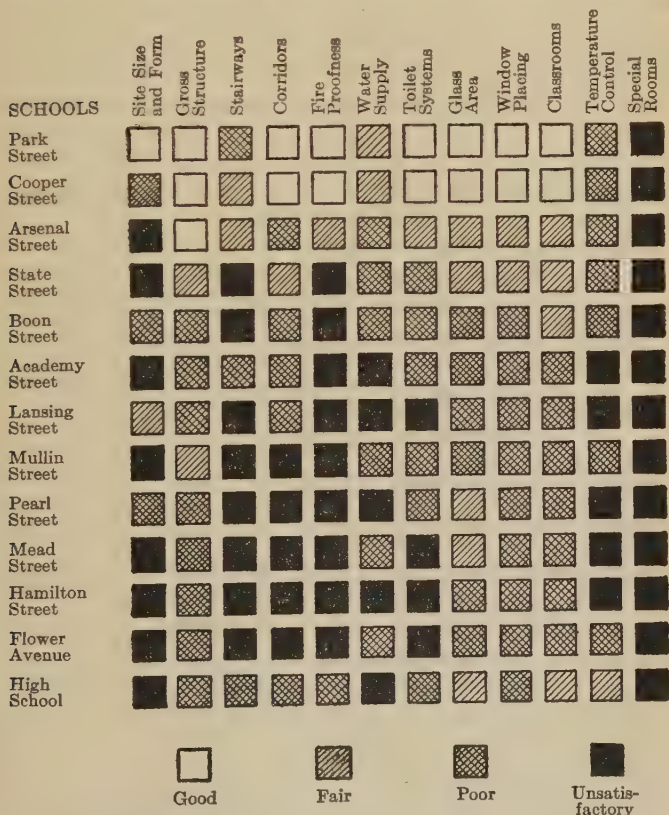


FIG. 24. Scores of some selected items of the Watertown, New York, school plant.

will be replaced first, followed in order by the ones scoring 382, 406, and so on.

Still other factors than the mere score of a building on a score card or the deficiencies of a given building are its accessibility to the children to be served, its present utilization, its possible capacity, and the possibility of making such administrative readjustments among several buildings that, taken as a whole, a group may be made to serve adequately whereas individual units would prove inadequate. A school building once well located may, because of changes in the character of

TABLE 34¹

SCORES FOR THE ELEMENTARY SCHOOL BUILDINGS OF WATERTOWN,
NEW YORK — 1924

SCHOOLS SCORED	ALLOT- TED SCORES	ALLOTTED SCORE					RANK ON BASIS OF TOTAL SCORE ALLOTTED EACH BUILDING
		Site	Build- ing	Service Sys- tems	Class- rooms	Special Rooms	
Park	680	107	135	155	264	19	1
Cooper	614	55	127	172	227	33	2
Arsenal	519	48	109	151	189	22	3
State	455	43	85	123	187	17	4
Boon	392	46	65	116	151	14	5
Academy	384	62	69	117	119	17	6
Lansing	370	68	65	90	140	7	7
Mullin	355	56	68	122	107	2	8
Pearl	326	65	57	79	122	3	9
Mead	323	44	42	116	117	4	10
Hamilton	316	59	53	81	118	5	11
Flower	307	47	61	101	97	1	12
Maximum possi- ble score . .	1000	125	165	280	290	140	

¹ George D. Strayer and others, *Report of the Survey of the Schools of Watertown, New York*, page 56. (Teachers College, Columbia University, New York; 1925.) Also in N. L. Engelhardt's *School Building Programs in American Cities*, page 92. (Teachers College, Columbia University, New York; 1928.) Used by permission.

its physical environment, be badly misplaced. Again, a building may be so poorly located that only a part of its capacity may be utilized while another structure will be congested. Where such a condition is found, some administrative readjustment may meet the situation adequately by removing rooms or departments from congested quarters to the building only partly occupied.

Table 34 shows the scores of the elementary school buildings of Watertown, New York, secured by the use of the Strayer-Engelhardt *Score Card for Elementary School Buildings*.¹ Figure 24² shows by means of different hatchings the relative condition of each school plant in each of the essential points scored.

THE ULTIMATE SCHOOL PLANT

It is probable that any modern city must look forward to a building program extending over a period of from ten to twenty years if it is to provide adequate modern structures. Such a plan involves a sequence of buildings which must be determined on the basis of necessary replacements, population and school enrollment growth, and the realization of the educational program of the city. The sequence should be worked out carefully as to time so that the school authorities and the community know the plan, and it should anticipate the erection of the various units at the times designated.

The new buildings should be located with reference to the population, present and future, to be served. In general, the units should be large, since they are less expensive to maintain than a multiplicity of smaller buildings. Here the factor of distance will determine the number and location of different types. Average standard walking distances have been determined as follows: elementary school, one half to three

¹ Published by Teachers College, Columbia University, New York.

² This figure, taken from the same source as Table 34, illustrates graphically the building scores in that table.

quarters of a mile; junior high school, one and one-quarter to one and one-half miles; senior high school, one and one-half to two miles.¹

This means that an elementary school will be located near the center of a circle with a diameter of one mile. A junior high school would have a circle with a diameter of one and one-half miles and a senior high school one with a still larger diameter. The territory really served is, of course, that included within a square circumscribed about the circle. This implies that in a replacement program a new building may replace more than one old structure. Many communities have before them such programs at the present time.

Figures 25, 26, and 27² show the development of such a program for Watertown, New York. In Figure 25 the center of each circle is an elementary school plant. The radius of each of these circles is a half mile — the standard average walking distance for elementary school children. A square circumscribed about one of these circles would show the entire district served. The overlapping of circles or squares indicates waste, inasmuch as the community is supporting more buildings than it needs, with the accompanying overhead expense of supervision, fuel, and janitor service. Furthermore, several of these buildings are mere nests of classrooms and are entirely without those special rooms that are so necessary to the realization of a program of modern education.

Figure 26 shows the ideal elementary school plan for the same city. This reduces the number of units from twelve to ten. The overlapping of circles is eliminated, thus making each unit serve about a square mile of territory. The result

¹ *Report of Committee on Schoolhouse Planning*, page 14. (National Education Association, Washington; 1925.)

² George D. Strayer and others, *Report of the Survey of the Schools of Watertown, New York*, pages 53 and 61. (Teachers College, Columbia University, New York; 1925.) Also in N. L. Engelhardt's *School Building Programs in American Cities*, pages 86, 100, and 101. (Teachers College, Columbia University, New York; 1928.) Used by permission.

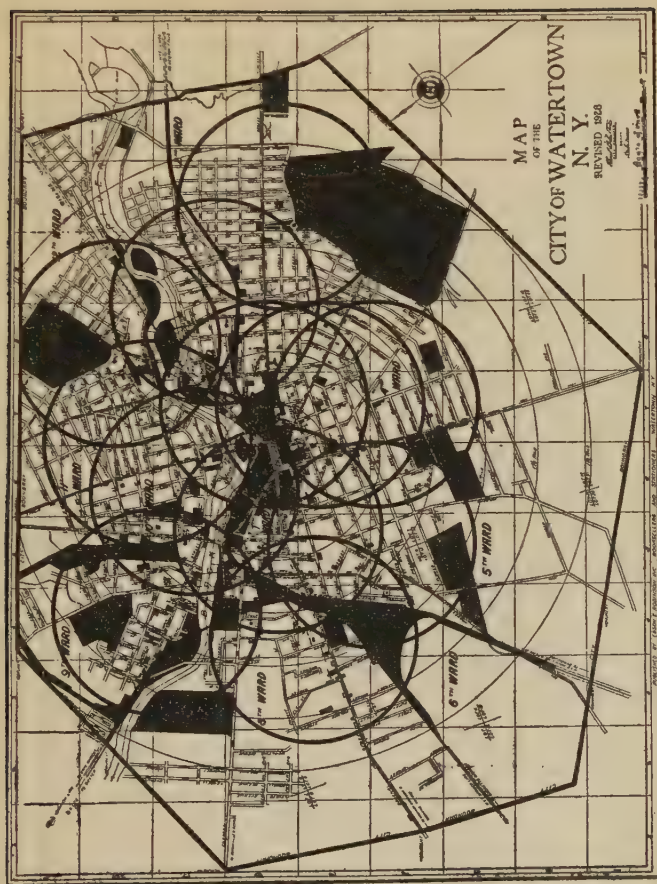


Fig. 25. The Watertown elementary school plant at the time of the survey.

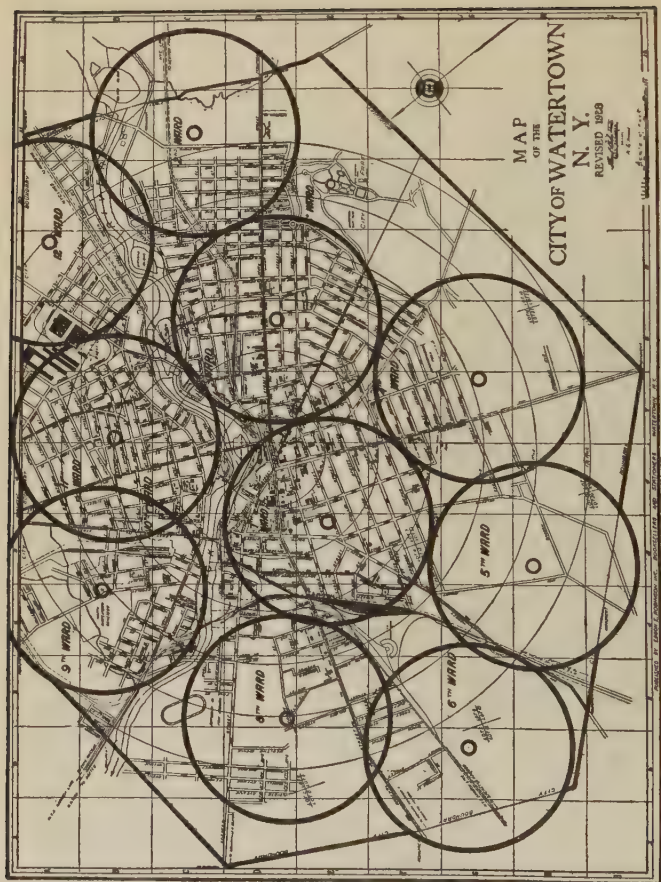


FIG. 26. An ideal plan for the elementary school plant of Watertown.

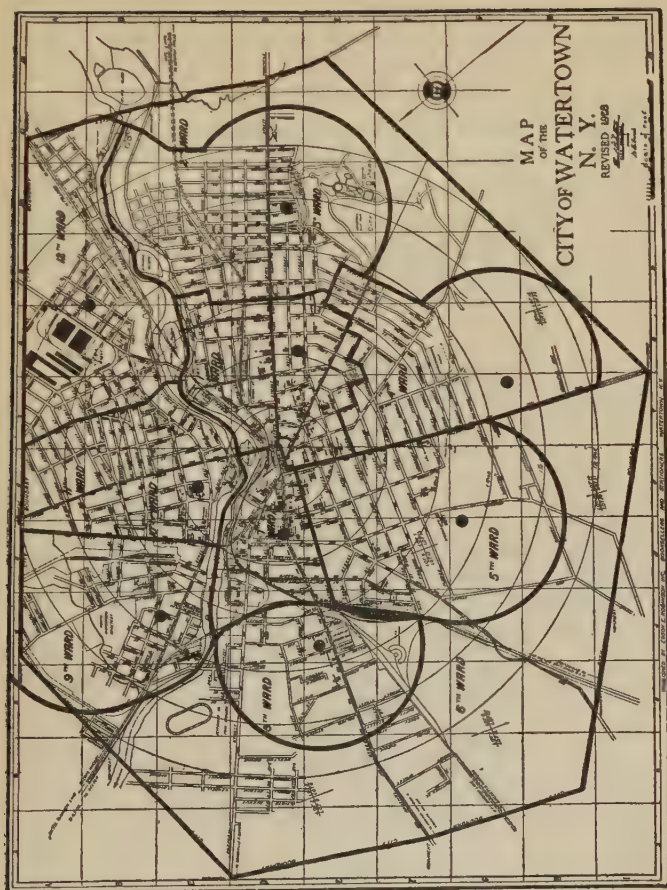


Fig. 27. Ultimate elementary school plant of Watertown.

is larger units with an accompanying per capita decrease of overhead and operation expense, and better educational facilities, because the city can afford groups of special rooms in each of the larger plants proposed. At the same time the maximum walking distance is held to approximately one mile.

Figure 27 shows the ultimate elementary school plant planned for Watertown, New York, in 1940. Provision is made for nine buildings instead of ten, as shown in the ideal plan of Figure 26. The ideal is no longer possible of attainment because of the erection in recent years of new buildings without a plan held clearly in mind.



FIG. 28. Location of present secondary school centers. The Key indicates the different types.

Such a program as this cannot be realized at once. It is therefore necessary to outline it by five-year periods, planning to erect in each period such buildings and additions as can be financed successfully. The sequence will be determined by the needs — the replacement of antiquated construction and the relief of congestion being the two needs to keep uppermost.

Figures 28, 29, and 30 illustrate the development of a secondary school building program for the city of Syracuse, New York, on which the author has recently been engaged. Figure 28 shows the present school plant with junior high

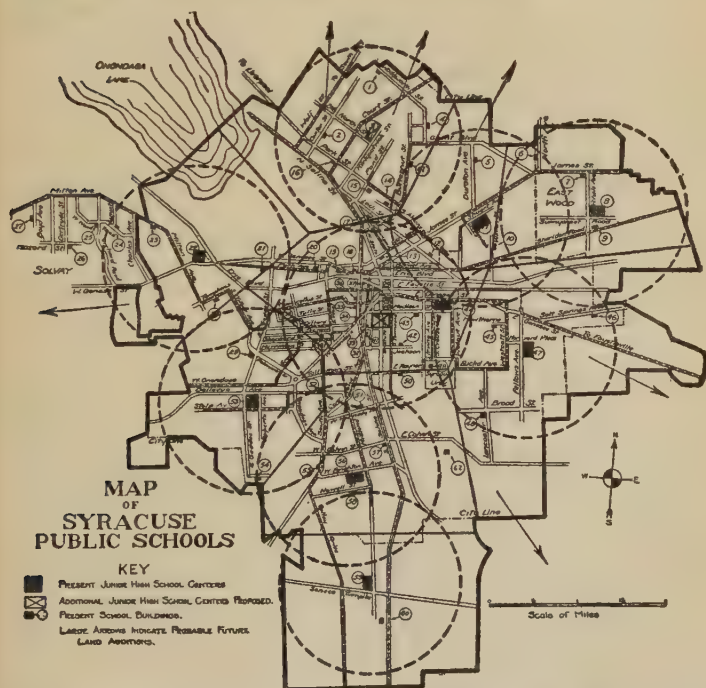


FIG. 29. The junior high school program proposed for the future. The Key indicates present and proposed centers.

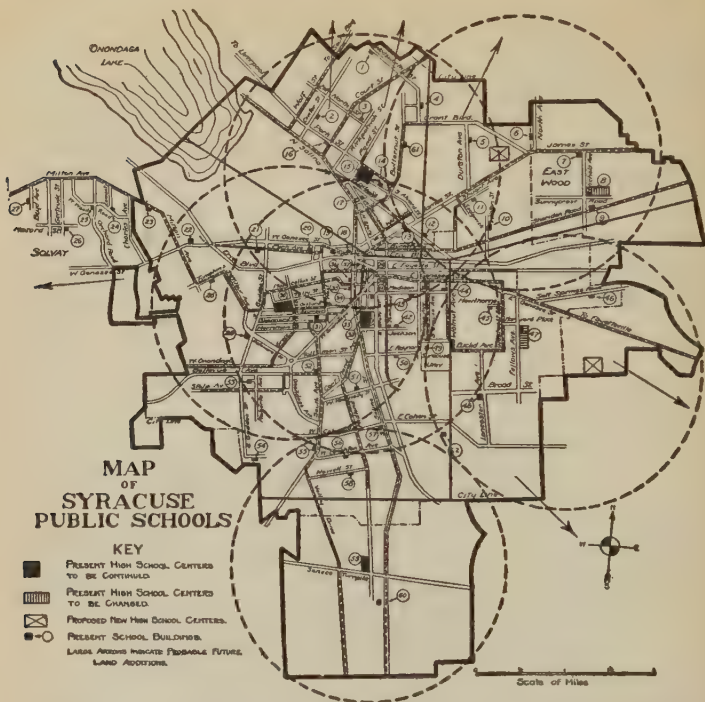


FIG. 30. The senior high school program proposed for the future. The Key indicates present and future centers.

school centers and high school centers so marked that the different types — i.e., four-year, six-year, three-year, and combined elementary and junior high school — are readily seen. Some parts of the city are well served by junior high school centers while others lack them. Such lack is especially noticeable in the northern part of the city. This condition is the result of following no definite plan in the development of the program.

Figure 29 shows a junior high school program which is proposed for the immediate future. The broken circles are

drawn with mile radii. The districts to be served are then indicated by the heavy straight lines which are drawn with reference to topographical features, railroads, industrial districts, and other natural and artificial barriers — a modification of the technique of circumscribing a square about the circle. It is obvious that there are nine districts thus formed with others to be added as land additions are made in the general directions indicated by the arrows. The southeastern section of the city, now sparsely settled but growing steadily, is an illustration of such a future development.

While theoretically the plan calls for nine centers, yet a very real problem confronts the city in connection with the circle in the center of the territory. Here there is a dense population, and the proposed elevation of the four tracks of the New York Central Railroad will divide this center district into two parts. It is not improbable then that a tenth school will be required to handle the junior high school enrollment north of the proposed elevation. Such a center would take some enrollment from each of two other junior high school districts adjoining it on the north.

Figure 30 shows a senior high school program which is proposed. Circles three miles in diameter are drawn about the proposed or existing centers. The heavy straight lines indicate the most obvious boundary lines for those districts. The program calls for a new development in the eastern part of the city, which involves the changing of an existing junior-senior high school combination to a future junior high school, and the erection of a new plant near the eastern boundary line of the city in a section that is expanding very rapidly. In the northeastern section of the city a similar change is contemplated; that is, the erection of a new high school center and the changing of an existing six-year unit into a junior high school. Pending the consummation of

the latter step, however, an addition to the present combined building is to be erected. The proposed location north and west of the present center is due to the location immediately on the east of a suburb with its own high school and to the expanding population on the north. Two specialized high schools are located in the center of the city with much of their territory overlapping. No change is contemplated here, the two continuing as at present to be vocational and academic respectively. The six-year unit in the southern part of the city will remain such with a substantial addition.

This secondary school program is planned to cover a period of approximately ten years, but, as in the case of the Watertown program, it should be divided into two steps of five years each.

SCHOOL HOUSING DEPARTMENTS

In the larger cities the problems involved in carrying on a school building program are so numerous, so technical, and so complicated that departments have been organized with well-trained men in charge. These men are not usually architects, but are men prepared by training and experience to plan a school building program and individual units of that program in terms of the educational program of their respective cities. They are making continuing studies of all the factors involved in adequate planning of the school plant. They are authorized not only to submit schedules of rooms and other suggestions to the architects but are expected to check the working drawings and specifications to see that the proper school building standards are observed and that each building as a whole represents the best adjustment to the educational needs of the district served.

Architects and engineers may or may not be attached to these departments. Whether they are or not, it is worthy of note that they work under the immediate direction of the person in charge of the school housing department and thus

through him under the superintendent of schools. Frequently, however, the school architectural work of a city is passed around among the various reputable architects with the school housing department in charge. Such a plan has obvious advantages as well as distinct limitations.

In the smaller cities, where such an organization is manifestly impossible, the superintendent must himself be able to direct such studies as need to be made from time to time, and to supervise the work of the architects and engineers employed by his board. Aid for these men is as a rule available through the school of education of the state university, which has attached to its staff one or more men competent to carry on studies and pass on the various questions arising in connection with the formulation of a plan and its realization.

FINANCING THE PROGRAM PROPOSED

An ever-recurring question in building activities is that of finance. It is clearly evident that a community must have the resources of taxable wealth before it invests a large amount in a school plant. Consequently, a necessary step in the planning of any building program is an analysis of the financial resources of a community. It will then be possible in the light of such an analysis to determine whether the community can build extensively and how much it is justified in investing in a school plant.

At present, no absolute standards prevail. The procedure is to make comparisons among the measures adopted with other cities. A financial analysis involves a statement in comparable units of such measures of economic power that comparisons can be made among cities of comparable size and similar problems.

The measures most frequently used are real wealth per capita, tax rate in mills for all purposes and for school purposes, percentage school tax rate is of total tax rate, ratio of

school and of total municipal indebtedness to real wealth, valuation of school plant per capita, ratio of school indebtedness to value of plant, and per pupil current expense. If among a group of comparable cities a given community ranks above the median or within the middle 50 per cent perhaps, it has been customary to assume that such a community was as able to proceed with the financing of a building program as other cities that had attempted such programs or were contemplating them.

Technique to determine a community's financial ability. In a recently published study Ward G. Reeder applies a technique for determining a community's financial ability to Chillicothe, Ohio. He compares that city with twenty-one other Ohio cities of comparable size and character.¹ In all respects except wealth per inhabitant and wealth per pupil enrolled, that city is favorably situated in comparison with the median city, as is shown in Table 35 compiled from the data given by Dr. Reeder.

This technique at best leaves much to be desired, but it is the most satisfactory yet devised. After all, if a community situated relatively unfavorably in comparison with others desires to proceed with a building program and is prepared to make the necessary effort, the program is possible, assuming of course that it is permitted by the state laws. On the other hand it may be impossible to realize a program in a wealthy community as measured by those factors if the citizens set themselves resolutely against it.

Publicity and a school building program. No matter how thoroughly planned a school building program may be or how

¹ Ward G. Reeder, "Measuring the Ability of a Community to Finance a School Building Program," *American School Board Journal*: Vol. 71, No. 5, page 65 (November, 1925), and Vol. 71, No. 6, page 65 (December, 1925).

Dr. Reeder uses sixteen measures, eleven of which are reproduced in Table 35. From these data he argues that "Chillicothe is in a very favorable position to finance a building program."

TABLE 35
A COMPARISON OF CHILLICOTHE'S FINANCIAL STATUS WITH THAT OF OTHER OHIO CITIES

ITEM OF COMPARISON	NUMBER OF CITIES COMPARED	MEDIAN OF GROUP	MIDDLE 50 PER CENT	ITEM FOR CHILLICOTHE	CHILLICOTHE'S RANK
Wealth per inhabitant	20	\$1,492.50	\$2,180.00—\$1,420.00	\$1,420.00	15
Wealth per child of school census age	20	\$6,222.50	\$7,803.00—\$5,353.00	\$6,909.00	9
Wealth per child enrolled in school	20	\$6,776.50	\$9,559.00—\$6,569.00	\$6,594.00	14
Tax rate for schools in dollars per thousand	17	\$10.49	\$13.13—\$9.25	\$9.21	14
Tax rate for all purposes in dollars per thousand	16	\$21.70	\$25.20—\$20.34	\$20.00	13
Per cent that school tax rate is of total tax rate	16	49.5%	52.3—46.9%	46.1%	13
Indebtedness for schools per \$1,000 of wealth	20	\$26.16	\$37.53—\$19.23	\$9.18	18
Indebtedness for municipal purposes, other than schools, per \$1,000 of wealth	15	\$26.85	\$37.75—\$17.48	\$15.79	13
Indebtedness for all purposes per \$1,000 of wealth	15	\$53.70	\$63.34—\$32.18	\$24.97	15
Value of school plant per enrolled pupil	19	\$333.00	\$519.00—\$268.00	\$227.00	19
Current expense per enrolled pupil	19	\$67.16	\$75.99—\$57.64	\$57.64	15

adequately the details of its financing have been outlined, it must be presented to the public in such a manner that the citizens and taxpayers realize the need for it and feel that the program can be financed satisfactorily. Such a program of publicity involves several activities. First, the building needs and the proposed program must be presented clearly, simply, and scientifically to the voters so that they may understand it. Every avenue of publicity should be utilized — newspaper articles, board publications, public addresses, lantern slides, posters, and so on. All questions should be anticipated and answered in advance, if possible.

It hardly need be urged that the presentation be straightforward, honest, and sincere. The voters should be taken into the confidence of the school administration and told the whole truth.

The plan of financing as well as the need of buildings should receive emphasis. Some simple, concrete method of presenting to the voters the increases in taxes involved is always desirable. As far as possible each taxpayer should be made familiar with the plan of financing proposed.

But this is not all. The program in its entirety should be kept before the public. As one unit is completed, the next step proposed should be called to public attention. Reports and bulletins issued from time to time should carry notices of the program, the progress that is being made toward its consummation, and the steps yet to be taken, in their proper sequence. With such a plan of publicity intensively carried out it is possible to bring to a satisfactory conclusion a building program of large proportions extending over a long period of time.

CONCLUSION

The planning of a school building program is a highly complicated and technical procedure. It is the work of competent persons trained in the proper procedures and possessing a

thorough knowledge of modern education with an appreciation of the physical equipment necessary to realize its aims and its needs. In a large city there may be a special department whose function it is to supervise the school housing plans, but in the smaller city this work falls upon the superintendent directly with such assistance as he may be able to secure from the state institutions of higher education.

Selected References

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This book is an outstanding contribution. Discusses population studies, measurement and evaluation of existing plant, and financial plans.

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REEDER, WARD G., "Measuring the Ability of a Community to Finance a School Building Program," *American School Board Journal*: Vol. 71: No. 5, page 65 (November, 1925), No. 6, page 65 (December, 1925).

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STRAYER, GEORGE D., and others. *Report of the Survey of the Public School System of Baltimore, Maryland*. Board of School Commissioners, Baltimore; 1921.

Evaluates the present plans and outlines building and finance program for one of America's largest cities. Valuable for technique applicable to a large city.

—— *Report of the Survey of the Schools of Watertown, New York*. Teachers College, Columbia University, New York; 1925.

Outlines the building and financing program for a small Eastern city.

—— *School Building Survey and Program for St. Joseph, Missouri*. Board of Education, St. Joseph, Missouri; 1923.

Outlines the school building program and financing plan for a fair-size Mid-Western city.

—— *Survey of the Public School Buildings and the School Building Program for Atlanta, Georgia* (School Year 1921-1922). Foote and Davies, Atlanta, Georgia.

Outlines the building program for a large Southern city having segregated schools.

CHAPTER FOURTEEN

PLANNING AND CONSTRUCTING A SCHOOL BUILDING

IN the preceding chapter a technique was outlined for planning, for an entire city, a school building program that might extend over a period of years. The various steps which are desirable in planning and constructing a single unit of the building program — a high school or an elementary school — will be discussed in this chapter. The school building program, if properly outlined, has indicated the need for such a unit, has pointed out its approximate location, has estimated the school enrollment for which provision should be made, and has stated the probable cost. All these data are extremely important; but after all, they serve merely to orient this one unit to the complete building program.

SURVEYING THE SITUATION

The first step in planning the erection of a school building is a careful survey of all the factors that may have a bearing, immediate or remote, on the educational program to be carried out in the proposed building. A modern school building should last for at least fifty years, and its accommodations — site, rooms, and equipment — will definitely limit the program of education that it can house.

The population of the immediate section to be served should be studied. The social characteristics of the community will indicate the parts of the city's educational program to which the proposed structure should be devoted. The number of children, coupled with the character of population, will give some indication of the number and kinds of rooms needed to carry out the program of education, while the figures regarding the increase of population will indicate what provisions, if any, should be made for future extensions.

This survey may be made by the superintendent, by a member of his immediate staff, or by outside experts called in to assist. A special committee of the board may even be appointed to work with the superintendent and the outside experts.

When a new building is desired, there is frequently a temptation to rush hurriedly into its actual planning and constructing without due consideration of these necessary preliminary steps. A little time, effort, and money spent on this type of work may save embarrassment and money in the end, to say nothing of securing for the community the plant that can best serve it.

DETERMINING THE SCHEDULE OF ROOMS

After studying these factors, the schedule of rooms, based on the program of education and the number of pupils to be accommodated, should be determined. This is the work of the local administrators, with the advice and assistance of such outside educational experts as may be desired; it is emphatically not the work of the school architect. Up to this point, indeed, there is no reason why an architect should be employed. In fact, one method of choosing an architect is based on the assumption that a room schedule has already been prepared.

Different techniques should be used in determining the room schedules for the four general types of buildings, which are (1) undepartmentalized elementary schools, (2) platoon elementary schools, (3) junior high schools, and (4) senior high schools.

For undepartmentalized elementary schools. The schedule of rooms for the usual sort of elementary school includes a sufficient number of classrooms to accommodate all the pupils. The capacity of each should be the number of pupils that one teacher can effectively instruct — at the present

time the accepted numbers range from thirty-five to forty. The special rooms will include those deemed necessary for certain special activities which are desired, such as gymnasium, auditorium (these two may be combined in a small building), lunchroom, homecraft laboratories, manual-training shops, and clinics.

For platoon schools. Room schedules for platoon schools have been scientifically developed by a number of cities. Charles L. Spain, deputy superintendent of the Detroit public schools, has arranged standard schedules for platoon schools of various sizes. In general, there must be classrooms enough to accommodate half the enrollment of the school while engaged in the so-called "academic work." The special rooms then must have a capacity sufficient to accommodate the other half of the pupils occupied with the so-called "special subjects." The schedule given in Table 36 shows the number of rooms thought necessary by Spain for a twenty-section platoon school, that is, one which accommodates seven or eight hundred pupils.

For junior high schools. The problem of determining the room requirements for a junior high school is not simple. This is due to the fact that the programs of study vary greatly from place to place. Variability exists in curricular offerings, average size of class, periods in the day, and periods per week required in the various subjects. A room schedule, then, that would house a thousand pupils in one city with one set of conditions would not serve for another city having a junior high school of identical size but with different conditions.

Dr. Anderson has evolved a procedure which takes these variables into consideration.¹ He presents a formula through

¹ Homer W. Anderson, *A Method for Determining the Housing Requirements of Junior High School Programs* (University of Iowa Studies in Education, Vol. 3, No. 3). (University of Iowa, Iowa City; 1926.)

the use of which an administrator is enabled to compute the number of classrooms needed for each subject or for groups of subjects using rooms of the same general type. He makes allowance for schedule making, since it is obviously impossible to build any schedule so as to utilize every room 100 per cent, and allowance is also made for a room capacity in excess of the average size of class, since there will always be variability in this factor. These allowances vary for schools of different sizes because conditions differ somewhat among them.

TABLE 36¹

DETROIT TWENTY-SECTION PLATOON SCHOOL

	NUMBER OF ROOMS	NORMAL CAPACITY	PERCENT- AGE OF TIME USED	TEACHERS REQUIRED
Special Rooms				
Auditorium	1	80	100	2
Gymnasium	1	80	100	2
Literature	1	40	100	2 ²
Science and geography . .	1	40	97	2 ²
Art	1	40	97	1
Music	1	40	100	1
Library	1	40	100	1
Manual training	1	20	100 ³	1
Domestic science	1	20	100 ³	1
Playground			95	1
Total special rooms . . .	9	400	99	14
Classrooms	10	400	100	12 ⁴
Grand total	19	800	99 +	26

¹ *Report of the Committee on Schoolhouse Planning*, pages 24-25. (National Education Association, Washington; 1925.)

² The extra teachers of literature, science, and geography give part of their work in rooms normally used for art, music, library, manual training, and domestic science, while teachers of these latter subjects have rest periods.

³ These rooms accommodate classes from neighboring schools not having shops 27 per cent of the time.

⁴ Two relief teachers, one teacher for penmanship, are included. Kindergartens are included in the school building, but they are not included in this tabulation.

The basic formula is :

$$\text{No. of classrooms for a given subject} = \frac{\text{Pupil periods per week in a given subject}}{\left(\begin{array}{c} \text{Average size} \\ \text{of class} \end{array} \right) \times \left(\begin{array}{c} \text{No. of periods} \\ \text{per week} \end{array} \right) \times (1 - S)}$$

The "pupil periods per week" are found in each case by multiplying the number of pupils taking a given subject by the periods per week that the classes meet. If, in one year of the course, a class meets a different number of periods per week from what it does in another year, then each group must be computed separately and the sum of the products thus obtained used. In the event that two or more subjects can use the same type of room as, for example, English, social science, mathematics, and foreign language, they may be combined with the reservation noted above.

The figure 1 in the denominator stands for 100 per cent occupancy. Since the realization of that is obviously impossible, an allowance (S in the formula) must be made which is expressed as a percentage less than unity. The allowance for programing varies with the size of school. Dr. Anderson suggests the following, which is applicable to all junior high school situations.

	SMALL SCHOOL BELOW 800	MEDIUM SCHOOL 800 TO 1200	LARGE SCHOOL 1500 AND OVER
Regular classrooms . .	0	0	0
Special rooms	.12	.08	.05

The allowances for excess above the average size of class is shown herewith :

	SMALL SCHOOL BELOW 800	MEDIUM SCHOOL 800 TO 1200	LARGE SCHOOL 1500 AND OVER
Regular classrooms . .	.20	.07	.04
Special rooms	.20	.16	.10

For high schools. Developing the room schedule for a modern secondary school is a more difficult matter because not only must all the present factors be considered, but the fundamental changes which are taking place in this field must also be taken into account so that a flexible plan may be evolved.

Methods of the N. E. A. Committee. The National Education Association Committee on Schoolhouse Planning suggests three methods of determining the schedule of rooms for a high school. They are (1) the method based on schedule of classes, (2) the method based on number of pupils in each subject, and (3) the method based on average distribution of pupils to recitations, gymnasium, and study.¹ The Committee suggests that the first is the most accurate, but adds that it is desirable to check one method with a second.

The first method involves the making of a complete schedule of classes by assuming the maximum enrollment that the high school is to house and by estimating the number of rooms required for a school day of a given number of periods. For complete details the reader is referred to the report of the Committee where each method is described in detail and concretely illustrated.

The second method is based upon computations involving the number of pupils in each subject when the maximum enrollment is reached. The number of rooms needed is determined by the number of pupils in a class and the number of periods in the day.²

This method involves less work than the first method, but it is not quite so reliable as one cannot be sure that the schedule may not demand more classes in some subject than will be given by this method. Furthermore, the use of a given room by two different subjects is contingent upon schedule complications.

¹ *Report of Committee on Schoolhouse Planning*, pages 27 ff. (National Education Association, Washington; 1925.)

² *Op. cit.*, page 32.

The third method is used when all the data required by the two preceding methods are not available. It requires familiarity with secondary school administration and information regarding the total number of periods per week; the average number of periods per week that the pupil will spend in instruction and in auditorium, library, and gymnasium; the average size of classes; and the approximate amount of work to be taken in the rooms fitted with special equipment.

Packer's formula. Dean P. C. Packer has devised a formula with a series of corrections which will enable the school man to estimate the number of rooms necessary if he knows the average registration in each subject for a period of five years. The formula for non-specialized classrooms is:¹

$$\frac{\text{The registered no. of students in subject} \times \text{Average no. of periods daily}}{\text{Average size of class} \times \text{No. of periods in school day}} = \text{No. of rooms required for subject}$$

The number is accurate when class sections are evenly distributed throughout the periods of the day.

To allow for loss in program making it is necessary to add corrections to the direct result by the formula of not more than 5 per cent in schools enrolling over 1000, 8.8 per cent for those enrolling 500 to 1000, and 14.7 per cent in schools of 150 to 500.²

In the case of subjects requiring specialized rooms

the formula proposed gives the exact number of rooms required in any subject with the one provision that the number of periods in the days be translated into the number of usable periods in terms of the table [which he presents]. No correction for program making is necessary other than that secured by considering every fractional part of a room as a whole room.³

¹ Paul C. Packer, *Housing of High School Programs*, page 22. (Teachers College, Columbia University, New York; 1924. Used by permission.)

² *Op. cit.*, page 40. The reader is referred to Dean Packer's monograph for the corrections to be applied.

³ *Ibid.*

Here again it is probably wise to check the results secured by the use of this formula with those secured in another manner.

A schedule of rooms for a high school. A schedule of rooms for a senior high school building which was arranged by the author for a Middle Western community is reproduced here.

SCHEDULE OF ROOMS FOR HIGH SCHOOL FOR CITY A

A. Type of school

High — housing grades ten to twelve inclusive. Capacity 900 to 1000 now with possible increase to 1200 in future.

B. Class of construction

A building of fire-resistive construction in its walls, floors, stairways, and ceilings, but with wood finish, wood floor surface in classrooms, composition in halls, and concrete roof construction over fire-resistive ceiling.

C. Building placement

On site to give the best appearance and service in judgment of architect. Site $400' \times 750'$, with Douglass Street paralleling the short axis of site. Probably three floors, ground floor above finished grade line.

D. Rooms or space accommodation required

I. Class and recitation rooms. Fourteen — size $23' \times 28'$, capacity of twenty-five to thirty each, designed primarily for languages, mathematics, and the social sciences.

II. Science rooms and laboratories

1. Chemistry laboratory — $23' \times 40'$, for thirty pupils, with fume hoods, apparatus room, and lecture room which can be used for English, history, or public speaking. This arrangement is suggested so that two chemistry teachers might be employed in the future, but until such time as two are employed, one teacher could handle the work, the lecture room to be used for other classes. This room should be equipped for lantern work. There should be an apparatus room with adequate provisions for preparation.

2. Physics laboratory — $23' \times 40'$, laboratory for thirty pupils, with lecture room to be used at present as classroom, and apparatus room as indicated for chemistry.

3. Biology (including botany) laboratory — $23' \times 40'$, for thirty pupils, with lecture room to be used at present as classroom and storage room as described in Paragraph 1. There should also be a small plant-room in connection with the laboratory.
4. Agriculture laboratory — $23' \times 36'$, for twenty-four pupils, with lecture room to be used at present as classroom, and storeroom as described in the first paragraph of this section.

III. Shops

1. Agriculture shop — a room $25' \times 60'$, capable of accommodating twenty-five boys so placed that large projects like a wagon box or a pig sty can be taken in and out. Toolroom and stockroom in connection.
2. Print shop — $25' \times 60'$, capable of accommodating modern printing machinery.
3. Machine shop — $25' \times 60'$, with toolroom and storage room.
4. General shop — $25' \times 60'$, with toolroom, storage room, and finishing room.

IV. Homemaking rooms and laboratories

1. Sewing room — $23' \times 36'$, with fitting room. Locker closets or similar devices for safe storage of projects. Capacity of room twenty-five to thirty.
2. Cooking laboratory — $23' \times 36'$, with locker closets or similar devices for aprons. Capacity of laboratory twenty-five to thirty. (Possibly individual kitchens.) Storeroom — $23' \times 8'$; and model dining room — $14' \times 14'$.
3. Laundry — $23' \times 24'$, with tubs and drier. The cooking laboratory should be located near the cafeteria kitchen so that the two may be used in conjunction, if necessary.

V. Business training rooms

1. Bookkeeping room — $23' \times 36'$, with business offices. Capacity thirty-five.
2. Typewriting room — $23' \times 36'$. Capacity twenty-five to thirty machines.
3. Dictation room — $23' \times 30'$, adapted for class work in other subjects as well. Capacity twenty-five to thirty.

4. Commercial geography room — $23' \times 30'$. Room to serve as well for other subjects. Capacity twenty-five to thirty.

The business training department should have a small storeroom with space for typewriter boxes, stocks of paper, and other materials of instruction.

VI. Art room

A room $23' \times 30'$ for freehand drawing and painting, with provisions for displaying work, also small storeroom.

VII. Music room

Room with small stage and storage facilities for musical instruments, this room to be located near the school club or society rooms, to constitute with them a suite adapted to small social gatherings. Capacity of room eighty to one hundred.

VIII. Library room

A combination library and study room, $23' \times 90'$, or larger, with small workroom and a book stockroom, the majority of books, however, to be kept in the combined reading and study room. Capacity 200-250.

IX. Student-activity rooms

1. General room $12' \times 23'$ for all high school organizations.
2. An office or room $12' \times 23'$ for director of girls' activities.
3. An office or room $12' \times 23'$ for director of boys' activities.

These three rooms should be located near the music room so that the four will constitute a group of rooms for social purposes.

X. Gymnasium

1. Gymnasium at least $80' \times 50' \times 20'$ with a movable partition so that one section may be used by boys and another by girls or the two thrown together.
2. Boys' gymnasium locker room and showers.
3. Girls' gymnasium locker room and showers, with dressing booths.
4. Combined office and examination room for girls' physical director.

5. Combined office and examination room for boys' physical director.
6. A small office for coach with storage space for athletic material.
7. Lockers and dressing room with outside entrance for athletic teams.
8. A small room with lockers and shower for visiting teams.

The gymnasium suite should be provided with independent entrances so that crowds attending games need not go through the building proper. There should be balcony seating space for eight hundred spectators with provisions whereby in the enlarged room temporary seating accommodations may be provided on the floor.

XI. Lockers

Lockers for wraps built in the halls and connected with ventilating system, unless there is space which would otherwise be useless.

XII. Auditorium

Auditorium carrying out the memorial idea. Capacity twelve hundred seats, with lantern booth. Stage at least 20' deep and ample in width, with dressing rooms and storage space for stage equipment.

XIII. Lunchroom

Cafeteria lunchroom, capacity three hundred to four hundred, with kitchen and storeroom located near the cooking laboratory. This cafeteria room should be so located that rolling partitions may be installed for future utilization as class or study rooms.

XIV. Administration offices

1. Principal's suite, including public office, private office, office for dean of girls, combined book and storeroom, and vault.
2. Board of Education suite, consisting of public office, superintendent's office, secretary's office, one office for supervisors' desks, bookroom, general storeroom, and vault.
3. The superintendent of buildings and grounds should have an office somewhere in this plant near the Board offices.
4. Small office for high school publications.

XV. Teachers' rooms

1. Room for women teachers, with kitchenette, lockers, and toilet.
2. Room for men teachers, with lockers and toilet.
3. Two teachers' offices equipped with tables and lockers to be used by teachers during vacant periods.

XVI. Storage and service rooms

1. The usual rooms for heating, ventilating, and coal storage.
2. Toilets on each floor for each sex, or general toilets with emergency toilets on each floor.
3. Janitors' room and janitors' storage room.
4. Nurse's room with hospital room and toilet.

GENERAL SUGGESTIONS

1. Building to be built on unit plan with ultimate capacity of approximately twelve hundred.
2. Partitions not forming supporting walls to be so constructed that building is flexible; i.e., certain partitions may be removed and placed elsewhere.
3. Telephone system with switchboard in office of principal, but with no outside connections.
4. A program clock with secondary clocks and bell circuits.
5. Separate fan for auditorium and gymnasium so that these may be used alone or cut off when not in use. Also provisions for cutting off one or the other of these rooms when only one is in use.
6. Vacuum cleaning system.
7. Automatic control of all direct and indirect radiation.

CHECKING THE SCHEDULE

Although the foregoing schedule outlines the units needed, it leaves many details to the judgment of the architect. To avoid misunderstandings and errors, various checking schedules have been prepared. Two of these are particularly worthy of mention.

The Strayer, Engelhardt, and Hart *School Housing Series* includes a form covering this need. It contains data that are essential to the preliminary sketches of new buildings.¹

¹ George D. Strayer; N. L. Engelhardt; and Frank W. Hart, *School Housing Series*. (C. F. Williams and Son, Inc., Albany, New York; 1920.)

The authors say that this form

. . . permits of the collection of all data essential to preliminary sketches. By using this form, school authorities can, with a minimum of effort and a maximum of certainty, render a complete, clear-cut statement of any program they wish to present to architects. Architects can, on the other hand, with the information gathered together in this form, solve the building problem submitted by school authorities with a positive assurance that their plans will meet with a minimum of suggested change and criticism. School administrators can, with the aid of this form, present to their boards of education for discussion a definite statement of any school building program.

The form contains checking spaces and descriptive lines for every possible detail — type of school, class of construction, work to be included in building contracts, money available, time limits, legal restrictions and regulations, climatic conditions, provisions for future extensions, building site, placement, pupil capacity desired, and rooms and space accommodations. The last heading lists 492 separate rooms. Space under each class is left for checking the number of such rooms desired, the size or pupil capacity of each, and suggestions as to location in the building.

This checking schedule undoubtedly will serve all the uses that are claimed for it, but Dr. Homer W. Anderson, deputy superintendent of Denver public schools, has developed a still more elaborate schedule which not only covers all the points in the foregoing schedule, but includes details of windows, doors, entrances, floors, walls, ceiling-light outlets with approximate size of light and type of fixture required, clocks, vacuum cleaning outlets, seating accommodations, radiation — in short, seemingly every conceivable detail which has even a remote bearing on the educational use of the plant. Sketches are included where necessary to show more clearly the items desired and their general relation to the whole layout. With such a schedule, any practicing architect who is

competent as a general architect should be able to prepare adequate plans and specifications.

SELECTING THE SITE

An important phase of every building operation within a school system is the selection of the site. This selection may be made by the superintendent of schools and his staff, by the board of education, or by a committee of school experts.¹ The site should be adequate for the building and its future extensions and also provide space for the activities of the pupils of the proposed school. This means that high school and junior high school sites will be larger than those for elementary schools. The physical nature of the site should permit the proper orientation of the building and should be of such character that no difficulties in construction will later arise. The site should be free from noise and odors; it should be safe, healthful, accessible for those using the building, and reasonably central to the contributing area — particularly when used for elementary school purposes. It must also take into consideration the trend of future growth.

Acquiring title to the site. A board of education may acquire title to a site either by direct purchase or by the exercise of the right of eminent domain. The first method involves merely the purchase of the property by some duly authorized agent for a sum approved by the board. An abstract of title should always be secured and examined by counsel or some other competent individual to make sure that the title is clear. If such examination shows the title to be defective, the proper steps should be taken to clear it, even to the bringing of a suit to quiet title. The second procedure is popularly known as securing possession of property through condemnation proceedings. The board requests some judicial tribunal, such as the district court, to appoint a jury whose members

¹ This last procedure is advisable where a bitter community disagreement over the location of a building may result in a divided board.

appraise the property and give possession on the basis of such appraisal. This practice has been characteristic of the New York City Board of Education for many years, and it is recommended as one means of securing a clear title to the desired property without instituting suits for that purpose.¹

SELECTING THE ARCHITECT

After these preliminary matters have been handled, a school board and its administrative officers are ready to select an architect. This duty has not been scheduled prior to this point because the primary function of the architect is to embody in a building, which is to be located on a designated site, a schedule of rooms in which a certain program of education is to be carried out. Up to this time the problems involved have been wholly educational — determining the building needs, making the schedule of rooms, and selecting the site. The problems now involved are architectural, engineering, and financial. For the first two of these problems the architect and his staff are needed.

Characteristics of a properly qualified school architect. The report of the National Education Association Committee on Schoolhouse Planning stipulates that the architect who is to be personally in charge of planning a school building should possess the following qualifications: ²

1. *Familiarity* with modern educational practice and the activities conducted in a modern school so far as they affect planning.

2. *Open-mindedness* to suggestions and willingness to revise plans so long as they can be improved.

3. *Originality and extended experience in school architecture.*

4. *Professional spirit* shown by his desire to secure the solutions that are best for the community and its children.

5. *Executive ability* to keep all working harmoniously so as to secure the best results.

¹ George D. Strayer and Robert M. Haig, *The Financing of Education in the State of New York*, page 90. (The Macmillan Company, New York; 1923.)

² *Report of Committee on Schoolhouse Planning*, page 2. (National Education Association, Washington, 1925.)

His organization, including the experts he employs, should be masters of (a) design as applicable to schools; (b) construction appropriate to schools; (c) heating and ventilating of schools; and (d) engineering.

This brief quotation probably represents the best statement of the requirements to be met in the selection of this highly important professional worker. It is not out of place, however, to emphasize the fact that the architect must be willing to coöperate with the school board and its administrative officers to embody in the best possible building the physical layout necessary to perform certain educational undertakings. Where a choice must be made between sacrificing space and equipment on the one hand and the architectural appearance of the building on the other, the architect must be ready to concede that the educational needs take precedence over all others. He must be willing to work patiently until the plans represent that perfect correlation of beauty and educational use so desirable in a school building.

Methods of selecting a school architect. Several American cities — Cleveland, St. Louis, and Chicago — have the full-time services of architects.¹ But in the great majority of cities an architect is employed only when a school building is to be erected. In the selection of one, either of two plans is followed. A competition may be held in which various interested architects compete by submitting their sketches embodying the schedule of rooms prepared by the board and its administrative officers. The other alternative is that an architect may be chosen because of his ability and experience in schoolhouse planning and construction.

Architectural competition. The only fair method, where a competition is held, is to ask all competing architects to embody the same schedule of rooms in their sketches and elevations. Only in this manner will the board be able to

¹ Some of the most eminent school architects in this country have served as the architects of the boards of education of certain American cities.

judge whether an architect possesses that originality and versatility so necessary to cope with the problems which confront him. In no event should the architect be chosen on the basis of sketches of other buildings planned by him. His aptitude at handling the specific problems before the board should be demonstrated.

Selection on the basis of experience. Probably a more satisfactory method is to select an architect on the basis of previous achievement. The board may visit buildings that he has designed to ascertain the degree to which he has correlated use with beauty. It can investigate the architect's relations with his clients, with merchants, and with contractors. The board can determine whether the disputes that frequently arise have been settled with a view to pleasing contractors and men who sell materials rather than to satisfying the client — a most important point to determine. In an architectural competition such procedure is not always possible, particularly if a decision is rendered on the basis of the showing made.

Preliminary sketches. When an architect has finally been selected, he should prepare the preliminary sketches of the building. To do this he will take the schedule of rooms prepared by the educational authorities and will decide with them upon the general type of building — that is, whether it will be closed or open, one story or more than one, like the letter I or E or H or L, or a rectangle or a square. He will then prepare sketches, drawn to scale, of the various floors of the building which will show walls, corridors, entrances, doors, windows — in short, all the details that are necessary to enable one to see the general arrangement of the building. There should be elevations of all sides to show the outside appearance, and sections parallel to each axis to show ceiling heights, floor levels, and stairways. These sketches should be in pencil so that changes can be readily made. On them

will be laid out the floor plans of the various pieces of equipment that the building will contain, such as pupils' desks, laboratory tables, bookcases, storage cabinets, and other equipment which will take up floor space. These detailed sketches should be considered at this time so that it will be known positively that the equipment will fit when the building is completed. This procedure should be followed whether the architect is to supervise the purchase and installation of the equipment or not. Many a board or school administrator has accepted a building only to find that standard equipment could be installed only after extensive alterations.

When this work has been completed, the educational authorities should check all these details carefully for the purpose of determining whether the building (1) will fit the site that has been selected; (2) will present a pleasing appearance; (3) will provide all the room and equipment necessary to carry on the proposed program; and (4) will represent the most economical use of the space included in the floor plans.

DETECTING WASTE

Checking to detect waste is one of the most important jobs which the school administration can do at this point. Score cards have been prepared for such checking, one of the best being the Strayer-Engelhardt-Hart Checking Chart and Score Card for School Building Plans and Specifications.¹ The National Education Association Committee on Schoolhouse Planning has devised its "candle of ratios" which is based on an examination of the floor plans of numerous school buildings erected in many different parts of the country. This candle, reproduced herewith,² includes the percentages of floor area for the purposes indicated.

¹ This chart and score card are Form 3 of the *School Housing Series*, published by C. F. Williams and Son, Inc., Albany, New York.

² *Report of Committee on Schoolhouse Planning*, page 1. (National Education Association, Washington; 1925.)

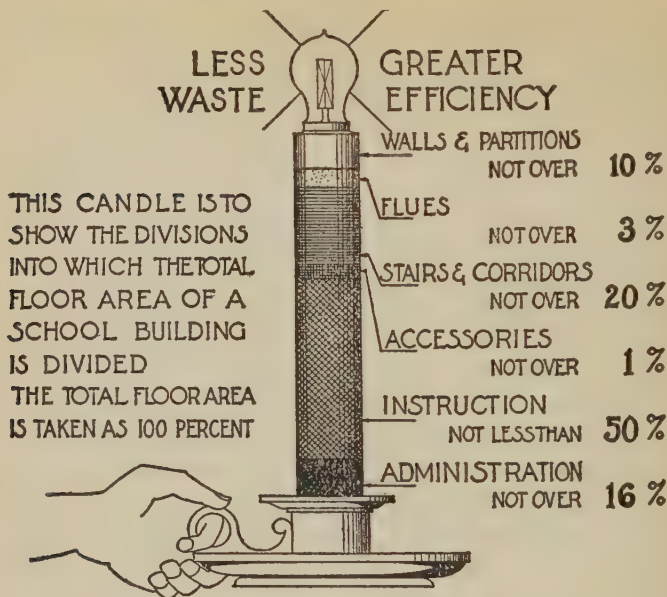


FIG. 31. The candle of ratios in schoolhouse planning.

The following definitions taken from the report of the Committee indicate the definition of each term used :

"Stairs and corridors" includes areas that are self-explanatory.

"Administration" includes the rooms for officials, instructors, medical department, service and storage rooms, general wardrobes, sanitariums, and area used for heating and ventilating apparatus.

"Walls and partitions" includes the floor areas occupied by the exterior walls and the interior partitions.

"Flues" includes the area occupied by the vertical flues.

"Accessories" includes closets, storerooms, and other areas not directly connected with the other divisions.

"Instruction" includes the floor area used by all departments for purposes of instruction, including auditorium, gymnasium, and their necessary accessories. It also includes the lunchroom when so planned that it can be used effectively as a study room.¹

¹ *Op. cit.*, pages 60-61.

A building whose preliminary sketches show wide variations from the standards here proposed should be examined carefully to determine whether changes may not improve conditions. For example, 25 per cent of space devoted to halls and corridors with only 45 per cent to instruction would indicate an improper proportion.

OTHER DESIRABLE PRECAUTIONS

There are other items that command attention. The building should be so planned that additions can be constructed without necessitating extensive changes in the existing structure. It should be flexible; that is, the building should be so constructed that the interior partition walls can be removed, thus making it possible to throw two or more rooms together, should that be desired. Finally, the provisions for safety should be examined carefully to see that suitable provision has been made to safeguard the lives of the children.

ESTIMATING THE COST

The board and its officers are now in a position to go before the community and request the funds to construct the needed building. After all this preliminary work a fairly accurate estimate of the cost of the building and its equipment can be made. When the preliminary sketches have been finished, an estimate of the cubage of the building can be made with a comparatively high degree of accuracy. On the basis of the cubage and the type of construction desired, the board and architect can make an estimate of the construction cost. To this should be added the cost of the site — if it has not already been procured — the cost of the equipment, the architect's fees, and an allowance for the supervision of the construction.

Thus the voters have before them an accurate estimate of the cost of the desired building. This information may be

used for publicity purposes, and all persons interested may feel assured that the total cost of the building will come very close to the estimate. Too often, funds are voted before a survey has been made to determine the schedule of rooms, or no account has been taken of the item of equipment, which — in a high school building of any size — constitutes a fair item of cost ; with the result that the board of education must curtail the building or equipment, or return to the voters for additional funds when a building is only partially completed. The procedure here outlined should make that unnecessary.

It may be objected that the architectural charges will be excessive for such preliminary work. If an architect is awarded a contract contingent on the funds' being secured for the erection of the building, he will usually render the service herein suggested for a nominal charge inasmuch as the real burden on his organization does not begin to be felt until the preparation of the so-called working drawings and specifications is under way.

PREPARATION OF WORKING DRAWINGS AND SPECIFICATIONS

When the preliminary sketches have been perfected to the point where no more improvement seems possible, the architect's office is ready to proceed with the preparation of working drawings and specifications. For this purpose an accurate survey of the site is necessary. This should include a contour map showing not only the elevation at frequent intervals but the location of every tree, cistern, sewer, building, cellar, and any other detail that may have a bearing on the placement of the building. Test holes should be sunk at designated points to give the architect a knowledge of the soil. If an extensive fill has been made, it will be necessary to specify different foundations from those that would suffice should the strata be the original ones placed there by nature.

The importance of the proper preparation of the working

drawings and specifications cannot be overemphasized. Here the building is really planned. Every cubic foot of concrete to be used in the structure is reckoned. The details of every beam, the diameter of every pipe and conduit, the size of every opening, and the capacity of every radiator must be computed with absolute accuracy. If the work is properly done, all these items should be checked. Nothing should be left to the imagination of the builder. The custom of requesting that sketches be submitted by the contractor or subcontractor for the approval of the architect cannot be condemned too strongly. Our American plan of constructing public buildings, which requires competitive bidding and the awarding of the contract to the lowest responsible bidder, should be allowed to function without interference. Should the details not be perfectly clear and definite, opportunity is afforded for numerous controversies and arguments during actual construction work. During the preparation of the working drawings and specifications the administrative officers of the board should keep in touch with the architect so that questionable points may be settled and the various details worked out satisfactorily to all concerned.

SECURING APPROVAL OF PLANS

Many states now require that working drawings and specifications be submitted to some state authority to insure their compliance with state laws governing the construction of school buildings. The final plans and specifications should be submitted to the state authorities after they are completed and immediately before the board is ready to advertise for bids. The proper state authority will indicate the changes that are necessary, but a competent architect will make himself familiar with these state requirements so that few if any modifications of the plans will be necessary. The board and its administrative officers should check them with great care after their completion before advertising for bids.

SOLICITING BIDS AND AWARDING THE CONTRACT

When the working drawings and specifications have been finally approved, the board of education and architect are ready to advertise for bids and award the contract. The awarding of contracts for public construction on the basis of competitive bids is almost universally required in the United States. Usually a definite time must elapse between the first date of advertising and the letting. This is to give ample time for contractors to make their estimates.

Two characteristics of most advertisements for bids are the requirement of a certified check or bid bond equal to a stated percentage of the bid as evidence of good faith, and the proviso that the board "reserves the right to reject any or all bids." This proviso is inserted to enable a board to reject bids from persons who might otherwise be awarded the contract to the detriment of the district. Needless to say, any board must exercise the soundest discretion in the matter of rejecting bids to avoid unnecessary litigation and to keep the good will of the reputable contractors on whom it must rely for bids.

"Faithful performance" bond. The successful bidder should always be required to furnish a "faithful performance" bond. This may be executed by a bonding corporation which furnishes that type of bond or by financially responsible individuals. The board should assure itself, in any event, that the guarantors are financially responsible. If they do not take this precaution, an insolvent bonding company may not be in a position to assume the financial obligation which it incurs through the insolvency of a contractor — and contractors not infrequently become insolvent during the progress of a job. Furthermore, such a bond frequently has many technicalities which an individual untrained in legal procedure may overlook entirely. Such, for example, is one frequently found, providing that any change from the

drawings or specifications must have the written consent of the architect and the bonding company. This clause looks innocent enough when the contract is executed, but it becomes of very great importance when the contractor becomes insolvent and it is discovered that a few minor changes have been made without the written consent thus specifically provided. Two precautions should be observed. In the first place, the board of education should never enter into a building contract of any magnitude without the services of an attorney retained by the board. This man should not be a member of the board even though he be an attorney because the board here needs the services of a man who is paid for his work, and an attorney member of the board cannot legally receive compensation for services rendered. In the second place, a specific exemption should be mentioned in the bond providing that *changes not aggregating more than a specified amount* can be made without the written consent of the bonding company. The board should insist that the bonding company sign the builder's contract jointly with him, thus making the bonding company a party to that contract (see Form 19 in Appendix).

SUPERVISING BUILDING CONSTRUCTION

After the contracts are awarded and the successful contractor begins building operations, the school board and the architect must be assured that all the provisions of the plans and specifications are carried out. Any board or administrator must remember that the best-prepared plans are not a guaranty that the building, when completed, will conform to them in every respect unless proper precautionary measures are taken. Under the American system of awarding a contract to the lowest responsible bidder, there is every temptation for a low bidder to make slight changes in the materials and methods of doing the work, thereby effecting a

saving for himself. The proper method of safeguarding the district's interests is to appoint a building superintendent or inspector to represent the school board. It is the duty of this man to make himself familiar with the plans and specifications — he must necessarily be familiar with materials and building processes if he is competent at all — to oversee all details of the work as it progresses, to insist on the use of the exact materials specified, and to see that all operations are performed in a workmanlike manner.

The service of many reputable architects includes the time of such a man while a building is in progress. The fee which the architect charges covers the salary of a competent superintendent to oversee the work. If an architect is employed who does not furnish such supervisory service, then the board or its executive officers should see that such service is provided. The salary of a competent man is but an insignificant percentage of the cost of the entire structure and may result in important savings for the district.

INSTALLATION OF EQUIPMENT

The building operations should include the installing of equipment — particularly in the case of secondary and platoon school buildings — the grading and landscaping of the site, and the laying of sidewalks and drives. This statement does not imply that the contract for these various operations should be awarded to the same contractor. On the contrary, the construction contracts are not infrequently awarded to three or four different individuals, and the equipment contracts may be awarded to a half-dozen or more firms engaging in that kind of work. But these contracts should be executed under the general direction of the architect and the building superintendent who represents the board and its interests.

Still another precaution should be observed by the board.

There is always a temptation to occupy a building as soon as possible, but this move should not be made before the building is absolutely complete in all details and accepted by the architect and the board of education, as such occupancy constitutes a technical acceptance of the building unless there is a carefully worded agreement to the contrary entered into by both the contractor and the board. The desire to realize the advantages of a new plant should never be permitted to militate against the district's securing all that it has paid for and has a right to expect.

CONCLUSION

The planning and erecting of a school building involve a series of highly important steps. The educational program should first be outlined with great care, and the building should then be so planned that it embodies the rooms and equipment which are necessary for this program. The architect should be selected on the basis of his ability to embody in a pleasing design a schedule of rooms adapted to the use to which the building is to be devoted. The securing of bids, the awarding of the contracts, and the supervision of construction are all highly technical processes which should receive the most detailed attention. Only by following these procedures with great care can a board be assured of a building that is educationally and architecturally complete.

Selected References

- ALMACK, JOHN C. "Introduction to the Management of School Buildings," *American School Board Journal*: Vol. 66, No. 6, page 66 (June, 1923).
This excellent article criticizes the score-card method of evaluating school buildings and suggests a plan for measuring them.
- ALT, HAROLD A. "Heating and Ventilating of Grouped School Buildings," *American School Board Journal*: Vol. 54, No. 4, page 54 (April, 1917).
A discussion of high- and low-pressure plants for groups of buildings is given here.
- *Mechanical Equipment of School Buildings*. Bruce Publishing Company, Milwaukee, Wisconsin; 1916.

This valuable work on heating and ventilation shows apparatus, air circulation, etc. Describes toilet fixtures, giving number and location. Discusses shower baths, partitions, fire protection, swimming pool, and sewage disposal.

ANDERSON, HOMER W. *A Method for Determining the Housing Requirements of Junior High School Programs* (*University of Iowa Studies in Education*, Vol. 3, No. 3). University of Iowa, Iowa City, Iowa; 1926.

Outlines a formula for computing the rooms necessary for housing junior high school programs.

AYRES, MAY. "A Century of Progress in Schoolhouse Construction," *American School Board Journal*: Vol. 54, No. 6, page 23 (June, 1917); Vol. 55: No. 1, page 25 (July, 1917), No. 2, page 24 (August, 1917), No. 3, page 24 (September, 1917).

This is a series of excellent historical articles following the evolution of the modern schoolhouse, showing changes in buildings, heating equipment, lighting, ventilation, and location of sites.

— WILLIAMS, JESSE FEIRING, and WOOD, THOMAS DENISON. *Healthful Schools — How to Build, Equip, and Maintain Them*. Houghton Mifflin Company, Boston; 1918.

The following chapters deal directly with school buildings: I, "Site"; II, "School Buildings"; III, "Rooms in the School Buildings"; IV, "Classroom Equipment"; V, "Lighting Supply"; VII, "Toilets"; VIII, "Heat and Ventilation"; IX, "Protecting the Schoolhouse from Fire."

BATELLE, JAMES O. "Architectural Styles as Applied to School Buildings," *American School Board Journal*: Vol. 58, No. 4, page 25 (April, 1919).

Discusses the value of making a building fit into the environment. This article should be an aid in selecting a style of building to meet the local environment.

— "Functions of the Architect in the Development of School Building Programs," *American School Board Journal*: Vol. 68, No. 2, page 59 (February, 1924).

Stresses the architect's part in selecting site, estimating costs, giving publicity to building needs, and making plans and specifications.

BENNETT, HENRY EASTMAN. *School Posture and Seating*. Ginn & Co., Boston; 1928.

A manual for teachers, physical directors, and school officials, which is based upon much scientific study.

BRUCE, WILLIAM G. "Fundamentals in School Architecture," *American School Board Journal*: Vol. 66, No. 1, page 77 (January, 1923).

An excellent summary of the steps and essentials to be noted in the work of the architect and in the planning of a school building suggested by Mr. Murison, formerly of the Michigan State Department of Education.

BRUCE, WILLIAM G. *Grade School Buildings*. Bruce Publishing Company, Milwaukee, Wisconsin; 1914.

Gives plans and illustrations of a large number of school buildings in different parts of the United States. Contains list of architects and samples of the work of each.

— *High School Buildings*: Vol. I (1913); Vol. II (1919). Bruce Publishing Company, Milwaukee, Wisconsin.

Volume I has 198 pages of illustrations and plans of high school buildings. Volume II has 320 pages, and contains articles on high school buildings written by specialists, as follows: D. H. Perkins, "High School Planning"; Irene Warren, "The High School Library"; James O. Batelle, "Assembly Halls"; and D. D. Kimball, "Heating and Ventilation." In addition, this volume contains 254 pages of plates showing buildings and building plans.

— "Securing School Architectural Service," *American School Board Journal*: Vol. 68, No. 1, page 80 (January, 1924).

Gives the results of a questionnaire sent out to determine how schools selected their architects and what it cost to get them.

DRESSLAR, FLETCHER B. *American Schoolhouses* (Bulletin, 1910, No. 5, of the United States Bureau of Education). Government Printing Office, Washington.

An excellent, detailed treatise is given in this pamphlet which is void of technical terms. It discusses school building and planning with emphasis on the hygienic side. It gives plans for classrooms, special rooms, construction of floors, arrangement of equipment, blackboards, doors, cloakrooms, stairways, and heating and ventilation.

— "Some Problems to Be Considered in Selection of Sites for School Buildings," *Proceedings of the National Education Association, 1915*, pages 951-955. National Education Association, Washington.

Discusses such problems as finance, location of building, environment, and orientation.

DONOVAN, JOHN J. "Relation between Boards of Education, Superintendents, and Architects," *Proceedings of the National Education Association, 1917*, pages 369-372. National Education Association, Washington.

Points out dangers of standardization. Tells how to select an architect and describes the situation from the viewpoint of an architect.

— *School Architecture — Principles and Practices*. The Macmillan Company, New York; 1921.

Discusses different phases of schoolhouse planning from site to plumbing. Contains contributions from specialists on different parts of building construction. Gives list of architects and specimens of their work. It is a valuable book.

FREEMAN, FRANK N. "Illumination Requirement of School Buildings," *Proceedings of the National Education Association, 1919*, pages 339-350. National Education Association, Washington.

This report is a valuable contribution, giving experimental results of an effort to determine an illumination standard, the effect of different intensities upon fatigue, and the relation of building construction to illumination requirements.

HOAG, E. B., and Terman, L. M. *Health Work in the Schools*. Houghton Mifflin Company, Boston; 1914.

This is a general treatise on health supervision in the schools, including methods of health observation. It deals particularly with the subject of the operation of the school plant from a hygienic point of view.

ITTNER, WILLIAM B. "Planning of High School Buildings," *American School Board Journal*: Vol. 66, No. 3, page 57 (March, 1923).

This is a valuable article by Mr. Ittner on special requirements of high school buildings.

— "School Buildings in Small Cities," *American City*: Vol. 28, pages 134-137 (February, 1923).

This article contains a discussion of the school plant at Greenfield, Ohio, where the school building problem in small towns and cities was met by centralization.

— "Standardization of School Buildings," *Proceedings of the National Education Association*, 1917, pages 375-379. National Education Association, Washington.

Discourages the standardization of school buildings.

JUDD, CHARLES H. "Educational Specifications for a School Building," *Proceedings of the National Education Association*, 1919, pages 365-369. National Education Association, Washington.

Urges adapting school buildings to school work and giving educational uses and requirements to the architect.

KOOS, LEONARD V. "Space Provisions in the Floor Plans of Modern High School Buildings," *School Review*: Vol. 27, pages 573-599 (October, 1919).

An excellent detailed study is here reported of the floor plans of 156 high school buildings with tables and summaries showing the frequency of the occurrence of different kinds of rooms in high school buildings from 1908 to 1917.

LOOMIS, ARTHUR K. *The Technique of Estimating School Equipment Costs* (Contributions to Education, No. 208). Teachers College, Columbia University, New York; 1926.

This work provides a method of preparing budgetary estimates to cover the cost of equipping new school buildings.

— *School Equipment Costs: A Method of Estimating*. Teachers College, Columbia University, New York; 1926.

This is an enlargement of the technique presented in the author's *The Technique of Estimating School Equipment Costs*.

MOEHLMAN, ARTHUR B. "The Evolution of the Public School Plant," *American School Board Journal*: Vol. 77, No. 3, page 62 (September, 1928, and subsequent issues).

Traces the evolution of a city school plant from the earliest types of buildings.

MORPHET, EDGAR L. *The Measurement and Interpretation of School Building Utilization*. Teachers College, Columbia University, New York; 1927.

Outlines techniques for measuring school building utilization with certain criteria, and applies these techniques to fifty-eight school buildings.

PACKER, PAUL C. *Housing of High School Programs (Contributions to Education, No. 159)*. Teachers College, Columbia University, New York; 1924.

Develops a technique for estimating the room schedule of a high school building when certain factors are known.

— "A School Building Program," *American School Board Journal*: Vol. 64: No. 1, page 55 (January, 1922), No. 2, page 45 (February, 1922).

Outlines the development of the school building program of Detroit, Michigan.

PERKINS, D. H. "What Service Should the School Architect Render the Board of Education beyond the Drawing of Plans and Supervising Construction?" *American School Board Journal*: Vol. 67, No. 1, page 64 (July, 1923).

This is a valuable article that will aid in clarifying the position of an architect in his relation to the school board.

REEDER, WARD G. *The Business Administration of a School System*. Ginn & Co., Boston; 1929.

Chapters VII, VIII, and IX discuss in considerable detail the activities involved in selecting and purchasing school sites, employing the school architect, and planning and constructing a school building. These chapters constitute an excellent presentation of the problem as a whole.

Report of the Committee on Schoolhouse Planning. National Education Association, Washington; 1925.

This is a comprehensive report on all aspects of schoolhouse planning. Gives standards. It is an outstanding contribution.

SNYDER, C. B. J. "Stupendous Schoolhouse Problem," *American School Board Journal*: Vol. 66, No. 2, page 59 (February, 1923).

Describes briefly New York's problem and gives steps in getting a new building in New York City.

STRAYER, GEORGE D., and ENGELHARDT, N. L. *Standards for High School Buildings, with Score Card*. Teachers College, Columbia University, New York; 1924.

Standards contain complete description of essentials of a school building and grounds. Contains a 1000-point score card for use in scoring buildings.

STRAYER, GEORGE D., and ENGELHARDT, N. L. *Standards for Elementary School Buildings, with Score Card*. Teachers College, Columbia University, New York; 1923.

Outlines in great detail the standards for elementary school buildings and develops a 1000-point score card for rating such buildings.

— and HART, FRANK W. *School Housing Series*. C. F. Williams and Son, Inc., Albany, New York; 1920.

A series of five forms for use in planning a school building. Form 1, charts for gathering data essential to preliminary sketches of the new building. Form 2, data essential to working drawing and specifications. Form 3, checking chart and score card for school building plans and specifications. Form 4, standard requirements for school buildings and sites. Form 5, blank forms for architectural competition.

United States Bureau of Education. *High School Buildings and Grounds* (Bulletin, 1922, No. 23, of the United States Bureau of Education). Government Printing Office, Washington.

This very thorough work discusses the elements common to all school buildings, such as safety, lighting, economies, etc., and the component parts of a secondary school plant, such as site, building, finish, and equipment.

United States Federal Board for Vocational Education. *Buildings and Equipment for Schools and Classes in Trade and Industrial Subjects* (Bulletin, 1918, No. 20, of the United States Bureau of Education). Government Printing Office, Washington.

Gives a comparison of general school buildings and industrial school buildings. Discusses types of buildings in general use, converted buildings, and describes in detail equipment and buildings for industrial schools.

CHAPTER FIFTEEN

FINANCING PROGRAMS OF CAPITAL OUTLAY

DURING recent decades the popularization of education has made striking demands upon the resources of American cities and school districts. The demand for more school buildings to house the ever-increasing enrollment and to provide for extensions of the curriculum have led to a demand for financing much schoolhouse construction. Furthermore, the development and use of school building standards have revealed the fact that many school buildings now in use are hazardous from a safety point of view and obsolescent with respect to modern theories of curriculum and school administration. This discovery has resulted in the abandoning of many old buildings as rapidly as new ones could be erected. Needless to say, all have had to be financed, and it has been perfectly natural and usual to finance them in such a way as to impose the least possible hardship on the present generation. The prevailing practice has been to mortgage the resources of the school districts by bonds to finance new construction.

Since a school bond is but one form of bond, one must know what bonds in general are to understand what a school bond is. Three definitions of bonds are consequently given here.

Chamberlain defines a bond thus :¹

To the word "bond" custom has given the prerogative of representing all subdivided interest-bearing contracts for the future payment of money that are drawn with formality, whether they are secured or unsecured, whether the interest is imperative under all conditions, or not.

Fowlkes speaks of a bond as follows :²

¹ Lawrence Chamberlain and George N. Edwards, *Principles of Bond Investment*, pages 79-80. (Henry Holt & Co., New York; 1927.)

² John Guy Fowlkes, *School Bonds*, page 24. (Bruce Publishing Company, Milwaukee, Wisconsin; 1924.)

A bond may be defined as an instrument issued by a corporate body in order to borrow money, in which the issuer promises to pay within a stated time a set sum with interest at some fixed rate, interest to be paid annually, semiannually, or quarterly, as the case may be.

Sumner says :¹

A school bond is simply a long-time mortgage, secured by our taxing power and divided into thousand-dollar units for convenience in buying and sale.

Chamberlain and Edwards classify a school bond as a quasi-municipal bond; that is, a bond issued by a taxing district established by statute for some definite purpose.² "Independent school districts whether urban or rural are quasi-municipalities, which may borrow and tax."

SCHOOL BONDS CLASSIFIED

School bonds may be classified in several different ways. According to the conditions attendant upon the payment of interest they are classified as registered bonds, registered coupon bonds, and interchangeable bonds. When classified according to the maturity of the principal, they are divided into straight bonds, sinking-fund bonds, and serial bonds. The two former are designated as long-term bonds.

A *registered bond* is one that is registered in the office of an issuing company in the owner's name. It can be transferred only on the endorsement of the owner and the recording of the transfer in the office of the issuing company. The payment of interest and principal can be stopped if the bond is lost or stolen.

Registered coupon bonds are registered as to principal but

¹ C. Sumner, "Concerning School Bonds," *American School Board Journal*: Vol. 58, No. 1, page 23 (January, 1919).

² Lawrence Chamberlain and George N. Edwards, *Principles of Bond Investment*, page 76. (Henry Holt & Co., New York; 1927.)

have interest coupons attached which are payable to the bearer. *Coupon bonds* are negotiable securities which circulate like bank notes without reference to the name of the owner, interest being paid by coupons.

Interchangeable bonds are those that may be converted two ways: coupon bonds into registered bonds or vice versa.

A *long-term bond* is one which comes due after a period of years. A *sinking bond* is a long-term bond for which a fund is provided for its amortization at maturity. A *serial bond* is retired by installments paid at regular intervals.

METHODS OF FINANCING PROGRAMS OF CAPITAL OUTLAY

There are four prevailing methods of financing programs of capital outlay. They are by cash payment, by long-term bonds, by serial bonds, by combinations of any two or all.

The cash-payment plan involves the levying over a short period of time of a direct tax, the proceeds of which will be sufficient to provide funds for erecting and equipping the structure. The use of this plan means that a school building once built will be paid for and the district will have no subsequent interest charges to meet.

The long-term-bond plan involves the issuing of bonds which will mature only after a definite period of time; for example, ten years, fifteen years, or twenty years. During that time the school corporation is paying interest at a specified rate on the issue. In some cases a sinking fund is provided by the levying of a tax each year, the proceeds of which are placed on deposit or invested in safe securities. This fund should accumulate, before the date on which the school bonds mature, an amount sufficient to pay off the issue.

A serial-bond issue is so arranged that a definite amount matures each year until the entire amount is paid.

A combination plan might include long-term bonds to-

gether with cash payments, serial bonds and cash payments, or a combination of long-term and serial bonds. Possibly all three plans might be used for financing the same construction.

TRENDS IN SCHOOL BONDED INDEBTEDNESS

The amount of school bonded indebtedness incurred from year to year in the United States as a whole shows a decided increase for the years 1902 to 1921. In 1902 the school bonded indebtedness assumed in the United States was \$16,800,000.00; in 1921 the school bonded indebtedness assumed was \$215,000,000.¹

In 1921 the amount of school bond indebtedness was in the Eastern states five and two-tenths greater than in 1902; in the Great Lakes states, twenty-two times greater; in the Western states, twenty-two times; in the Southern states, twenty-four times greater; in the Great Plains states, thirty-six and two-tenths times greater; in the United States as a whole, twelve and eight-tenths times greater.

The per capita bonded indebtedness of the United States as a unit was 21¢ in 1902; in 1921 it was \$2.02.

It is thus evident that school bonded indebtedness is increasing in the United States by a significant amount each year. It is imperative, therefore, that the public school administrator should be thoroughly familiar with the technique of voting and issuing bonds and with the arguments for and against the various types of bonds that may be issued. These facts involve the measuring of a city's ability to finance a program of capital outlay, publicity campaigns for school bonds, procedure leading to the issuance of school bonds, issuance of the bonds, the marketing and the retiring of school bonds.

¹ John Guy Fowlkes, *School Bonds*, Table 2, page 35. (Bruce Publishing Company, Milwaukee, Wisconsin; 1924.)

MEASURING A CITY'S ABILITY TO FINANCE
A PROGRAM OF CAPITAL OUTLAY

Financial comparison with other communities of like size and character probably constitutes the best method yet devised of measuring a community's ability to finance education. Measures that have been used effectively in the past were discussed in the preceding chapter. Comparisons made with these measures among cities of like size and character will reveal the relative position of any given city with reference to each of the others. Should a city find itself among the less favorably situated, then a conservative policy is probably highly desirable. If, on the other hand, a city is very highly rated in such a comparison, it can be more liberal in its attitude toward assuming additional obligations.

Through the various survey reports that have been issued, school administrators not already familiar with the techniques or sources of data can discover both. Elsewhere (page 324) the author illustrates the application of this technique to a concrete situation.

PUBLICITY CAMPAIGNS FOR SCHOOL BONDS

If a board of education wishes a satisfactory outcome of a bond election, it must be prepared to take the public into its confidence completely and make it acquainted with all aspects of the situation. Such a measure involves an intellectual appeal — so that the voters may understand clearly all the details — and an emotional appeal — so that the voters feel the necessity of acting in the interest of the welfare of the children involved. The publicity material should be prepared simply, honestly, and sincerely with the idea always in mind of seeing the point of view of the man who may not agree entirely with the desire of the board. The inadequacy of the present plant should be presented to the voters by the various means of publicity available. The playgrounds

may be too small or improperly equipped. School buildings may be inadequate in room space; they may be obsolescent, and therefore not adapted to housing modern educational activities.

A second type of publicity which should be used is that designed to show the community's ability to finance the proposed schoolhouse construction. The various comparisons with other cities that have just been suggested may be made available in a number of different forms so that the voters may understand clearly what the city is able to do. Among the items of very great interest to every taxpayer will be the amount of additional tax necessary, interest payments, and bond maturities, together with an estimate of the increase of taxes resulting from the issuing of the bonds.

All classes of people must be reached — heavy taxpayers, laborers, illiterates, homemakers, retired farmers, and all other classes represented in the community. The avenues of approach are the press, newspaper display advertising, billboard advertising, four-minute speakers in the theaters, addresses before meetings of all kinds, handbills, dodgers, tags, pamphlets — anything, in fact, that will present the case clearly and command the attention of the people.

Causes for failure of bond campaigns. It is not out of place for a board of education and superintendent to keep in mind causes contributing to the defeat of various proposals. Among these may be listed the following: (1) ignorance of voters, (2) no campaign for, or an active campaign against, bond issue, (3) lack of publicity, (4) antagonism of the press, (5) antagonism of men of wealth and of politicians, (6) general financial depression, (7) increased taxes due to other improvements, (8) desire for other community improvements, (9) high taxes, (10) charge of school extravagance, (11) lack of information on schools, (12) lack of interest in education, (13) location of the buildings proposed, and

(14) indifference of voters. These are but a few of the causes that have contributed in the past to the failure of bond issues to carry. These and many others may be overcome by a proper publicity campaign carried on for a reasonable length of time preceding the bond election.

PROCEDURE LEADING TO THE ISSUANCE OF SCHOOL BONDS

The most essential requisite for the success of a school bond issue is that all legal restrictions or provisions be strictly observed. It is necessary, therefore, in preparing for the authorization of a bond issue that all technical details be observed with great care. Chamberlain states that the factors which most generally cause bonds to be declined are legal provisions which have to do with (a) the authority of the issue, (b) the purpose of the issue, (c) the process of issue, and (d) the violation of debt and tax restrictions. Failure to comply with any detail of existing legislation makes an issue illegal; consequently boards of education and superintendents of schools should exercise great care in observing existing statutory provisions.

Employment of counsel. The best method of inaugurating a bond issue is for a board of education to employ an attorney who is more or less familiar with the technicalities of voting and issuing bonds. The best-equipped men, of course, are bond attorneys whose business is limited very largely to passing on the legality of bond issues and whose opinions are accepted by reputable bond brokers. Such an attorney should be employed before the first steps are taken to secure the consent of the electorate to issue bonds. His judgment should guide the board and the superintendent at every stage, from the preparation of a petition — which forms the starting point if a petition is required — to the preparation of the last resolution of the board relating to the sale of the issue.

Frequently a local attorney is employed for this work ; but unless he is thoroughly familiar with the statutes and procedures involved in the authorization and issuance of bonds there is a possibility that he, too, may make errors that will invalidate the issue.

Very often one of the board members is an attorney and the board depends upon his judgment. The objection to this plan is that there is a tendency for the attorney to do the work in possibly a less satisfactory manner than would be the case if he were receiving compensation for his services.

Finally, boards of education may secure for a very small consideration from a firm of bond brokers the services of a bond attorney, the board promising in return that the bond brokers will be given an opportunity to bid on the issue. This plan is probably the second best plan of those outlined here.

Authorization of issue. The ultimate authority to incur bonded indebtedness for school purposes usually rests with the electorate. Forty-one states have definite statutory provisions which designate the persons who are responsible for the borrowing of money and the issuance of bonds. These provisions are quite varied in nature as the following statement will show :¹

In twenty-eight states such responsibility is vested solely in legal voters ; in eight states, in legal voters who are taxpayers ; in three states, either in legal voters or in school trustees according to the purpose for which, or the district in which, bonds are to be issued ; in one state, in school trustees alone ; in one state, either in the township trustees upon authorization of the township advisory board, or in school trustees according to the kind of school unit concerned.

Observing technicalities. The election which is called for the purpose of securing the authorization of a bond issue must be conducted in all its details strictly in accordance with

¹ Theodore L. MacDowell, *State vs. Local Control of Elementary Education* (Bulletin, 1915, No. 22, of the United States Bureau of Education).

the provisions of the state statutes governing such elections. The form of petition, if such is required, the election notices, the length of time elapsing between the publication of the notice of election and the holding of the election, the statement on the ballot of the proposition to be voted upon, and the election returns must all be technically correct. Even so small a matter as a slight change in the wording of the petition and of the election notice has been known to invalidate an election. It is during this procedure that the services of a competent attorney are well-nigh indispensable. His fees may be less than the cost of a second election. Again, the increased market value of the bonds because of their unquestioned legality may offset the attorney's fees several times over.

Official records. It is highly desirable, of course, that all steps taken be incorporated in the official records of the board — the form of petition, copy of the election notice together with proper certification of publication, form of ballot, election returns, and the various board resolutions following the election returns. These will constitute the record for passing on the legality of the issue. A certified copy of all such proceedings will be required when the bonds are sold.

MARKETING SCHOOL BONDS

There are three methods now in use of disposing of school bonds that have been authorized. They are (1) by private sale, (2) by public sale, and (3) by irregular methods.

Private sale. A private sale means the disposing of bonds without giving a public notice and securing competitive bids. Such a sale is possible in the states where such sale is not specifically forbidden, but in the majority of states public sale is definitely required. From the standpoint of the school district a private sale has the advantage of enabling the school corporation to dispose of the bonds quickly when in imme-

diate need of funds or when the market is especially favorable. From the standpoint of the purchaser, a higher bid can probably be made than would be possible if there were competitive bids. But public sale is usually more desirable because the terms are likely to be more favorable for the district and public confidence can thereby be better retained.

A special form of private sale is the disposing of bonds "over the counter" in small blocks to local investors. This plan is feasible when the issue is small, but it would probably be difficult to dispose of a large issue in this manner. On the whole, the district will probably net more through disposing of the entire issue through a reputable bond broker who is in touch with large investors than by this sort of private sale.

Public sale. A public sale is one of which public notice by advertising has been given. It is advantageous because it invites competition. If ample publicity has been given in some well-known financial organ, it is possible to have bidders representing varied interests and many sections of the country. The bidding may take one of two forms, sealed bids or auction bids.

A sealed bid is one which is submitted by a bidder at the appointed time, accompanied usually by a certified check or a bidder's bond as evidence of good intent. It represents usually the best offer that the bidder is prepared to make.

Auction bids, on the other hand, involve competitive bidding at the time of sale. Under this system the early bids do not represent, as a rule, the best price that the prospective purchasers are prepared to pay, but are rather "feelers." As the bidding progresses more favorable bids are secured, but the bidders are likely to submit a variety of proposals so that no one but a bond expert himself could interpret intelligently some of the bids.

Sealed bids give the board the best offer of each bidder

at the outset and enable its members to retire with their attorney or a disinterested bond expert and compute the true worth of each bid. On the whole, a public sale with sealed bids is the most satisfactory procedure.

Irregular methods. Other plans are the bartering of bonds to a contractor in consideration of his work on a building, the sale of bonds to a state organization like the Kansas State School Fund Commission, or the Oregon State Land Board, or the Texas State Board of Education. The bartering of bonds is hardly ever defensible and is specifically forbidden in some states. The other methods are frequently of advantage to small districts limited in resources but may work a hardship on the larger ones unless the state body is prepared to meet the offer of the best bidding commercial broker.

Advertising the issue. Whether or not it is mandatory under the law, a school bond issue should have wide publicity in financial journals having a national circulation. The notice should allow for sufficient time to elapse to permit bidders to prepare their bids and possibly send representatives to the letting. The notice may be short or long. If short, it should contain the following data: amount of bonds, date of issuing, date of sale, purpose of issue, maturities, and rate of interest if the rate has been determined upon. A longer notice may include a general financial statement of the community and detailed data concerning the issue.

In any event a general statement should be prepared, giving essential information for the use of prospective bidders. According to Fowlkes this should include the following data: ¹

A. General financial statement of the community

1. Estimated value of taxable property in the issuing corporate body.
2. Assessed value of all taxable property for preceding year.
3. Per cent assessed value is of actual value.

¹ John Guy Fowlkes, "Marketing School Bonds," *American School Board Journal*: Vol. 68, No. 1, page 76 (January, 1924).

4. Total tax rate against community per \$1000 actual value (including state, county, schools, road, water, and all other special districts).
- B. General information concerning the offered issue**
1. Purpose of issue (to build what buildings, etc.).
 2. Maturity dates, dates and places of payment of principal and interest; denominations of bonds; registry of bonds as to principal or interest.
 3. Rate of interest, plan of payment (optional or callable).
 4. Security of issue — mortgage or other special provisions, as setting aside funds to retire bonds from the first school monies collected.
 5. Method of bids, forms, amount of money that must accompany bid as a guarantee of good faith, date when checks of unsuccessful bidders will be returned.
 6. Who will bear expense of printing bonds, and paying attorney's and other fees?
 7. Statute numbers authorizing issue.
 8. Past record of issuing body in debt assumption, number of issues defaulted, contestations, etc.
 9. Date bonds will be dated. Date from which purchaser must pay interest to issuing body; in what specie bonds will be paid for — check, cash, etc.
 10. Date, hour, and place of sale.

PASSING ON LEGALITY OF THE ISSUE

If the legality of the issue has not been passed upon by a reputable bond attorney prior to the sale of the issue, the securing of a satisfactory opinion on its legality will be a condition of the sale. It has been suggested throughout this discussion that the procedure must be technically correct in every detail. The attorney passing on the issue will require certified transcripts of all official records. A list prepared by Charles H. Meyer is typical, though it was prepared with small Pennsylvania cities specifically in mind. This list includes the following items:¹

¹ Charles H. Meyer, "The Marketing of School Bond Issues by Small Cities," *American School Board Journal*: Vol. 63, No. 2, page 36 (August, 1921).

1. Certified copy of the minutes containing resolution as to the increase of indebtedness, giving the page number, the date and place of meeting, etc.

2. Certified copy of any amendatory resolution made at a subsequent meeting, if such action is desired or made necessary.

3. Affidavits as to publication of election notices, if a public election is held.

4. Affidavits as to publication of sale of bonds.

5. Certified statement under seal of court made to district as to result of election.

6. Certified copy of financial statement filed in court.

7. Certified statement by proper officer as to the valuation of the taxable property of the city or district.

8. Certificates of election of board members and present officers.

9. Certified statement as to sale of bonds.

10. Statement that no litigation is pending or threatened affecting said issue of bonds.

11. Certified statement that no judgment or claims have been entered previous to delivery of bonds.

12. Affidavits as to genuineness of signatures on each and every bond.

13. Examination of properly executed bond or bonds before delivery of same.

RECORDING SCHOOL BONDS

It is very important that school bonds be recorded by the proper authorities. Only by means of a carefully kept record can the total bonded indebtedness of a taxing district be ascertained. "Men have disagreed by millions as to New York's actual debt."¹

Strayer and Engelhardt have provided a set of forms that are helpful in keeping a record of the bonds issued,² together with other pertinent data (see Form 22 in Appendix). In addition to a record by the taxing district which issued the bonds, registry with state or county officials and sometimes both is required.

¹ Lawrence Chamberlain and George N. Edwards, *Principles of Bond Investment*, page 6. (Henry Holt & Co., New York; 1927.)

² George D. Strayer and N. L. Engelhardt, *School Record Series*. (C. F. Williams and Son, Inc., Albany, New York.)

RETIRING BONDS

There are in vogue for the retirement of bonds three plans corresponding in general with the types of bond.

The term bond may be paid by a single tax the year the issue matures. Usually the taxpayers are not ready to meet too large an obligation, and the tendency is to refund an issue.

A second method, of course, is the deliberate refunding of an issue. The danger of repeated refunding is that the community may lose sight of the real purpose of the issue, and the object for which the bonds were issued may even be replaced by another while the bonds still constitute an obligation against the school district.

A third plan is the sinking fund. Such a fund is created by the levy of a small tax over a period of years. It is invested in securities authorized by law and the interest is added to the principal, thus making the fund larger. Theoretically this fund equals the amount of the bond issue at maturity and is used to liquidate it. There are, however, certain objections to the sinking-fund plan of retirement :

- (1) Public officials frequently use these funds for other purposes than retiring bonds.
- (2) It is practically impossible for anyone except a technical expert to calculate the amount of the levy which, properly invested, will produce the funds needed to amortize the issue at maturity.
- (3) It is difficult to educate the public in the complex nature of sinking-fund plans.
- (4) It is often accompanied by failure to invest the funds properly.
- (5) Leadership is frequently lacking for the proper maintenance of a sinking fund.
- (6) School boards not infrequently fail altogether to estab-

lish a sinking fund, relying upon refunding at the maturing of the bonds.

(7) Proper auditing is usually lacking.

ADVANTAGES OF SERIAL BONDS

From every point of view the serial bond is the most desirable. Each year a definite levy can be made to retire the bonds maturing that year. It thus becomes a simple matter for the board to estimate the amount needed for this purpose.

Engelhardt outlines four advantages possessed by this type of issue.¹ They are: (1) It overcomes most of the objections to other plans; (2) it permits of improvements in years to come; (3) it is easy for the public to understand; and (4) it offers no administrative difficulties.

From every angle, then, a serial-bond issue is to be preferred by a school district to any other type of bond. It is the least desired by bond brokers, who always offer a little larger premium for the straight long-term bonds since their clients prefer that type. It is probably this fact more than any other that in the past has led to the issuing of so many bonds of other types than the serial.

POSSIBLE SCHEDULES FOR SERIAL-BOND ISSUES

Five schedules are possible in issuing serial bonds, thus allowing much flexibility:

1. The annual installment plan in which the annual payments on the principal are equal.
2. The annuity system, in which the total annual payments of interest and principal are equal.
3. Annual payments on principal larger during earlier years of life of bond.
4. Annual payments on principal smaller during earlier years of issue.

¹ N. L. Engelhardt, *A School Building Program for Cities*, Part III, page 115. (Teachers College, Columbia University, New York; 1918.)

5. No payments on principal during earlier years, then one of above plans during balance of time.

BOND ISSUES *vs.* OTHER PLANS OF FINANCING

There is a strong trend of opinion toward the adoption of a cash-payment policy for financing programs of capital outlay when cash payment is at all possible. The conventional argument for the issuing of bonds for school buildings has always been that the generation enjoying the use of the plant thus financed should pay for it. In recent years, however, it has become very clear that each succeeding generation will have no end of problems of its own without inheriting too many others. It has also become apparent that many of these obligations once incurred are refunded rather than liquidated. Finally, any bond issue is in the end costly from the standpoint of interest paid. Suppose, for example, that a school building costing \$100,000 is financed by straight twenty-year bonds drawing 5 per cent. Assuming that these bonds are paid at maturity, the interest paid will have been \$100,000, so that the building has cost — not \$100,000 but \$200,000! If a sinking fund is built up and properly invested, the amount in excess of \$100,000 will be reduced by an amount corresponding to the interest earned by the investment of the sinking fund. But unless that fund has been unusually well invested over a period of years, it can never produce that amount.

CASH-PAYMENT PLAN

There are two methods of providing for cash payments: a tax payable at the time the building is erected, and the sinking-fund plan in which the money accumulates before it is used. Many cities are using the latter plan particularly for the financing of their elementary school plants.

There are five distinct advantages of the cash-payment plan:

1. The present population meets its own educational obligations.
2. All objections to long-term bonds are overcome.
3. No interest is paid.
4. Interest accrues on sinking fund.
5. Attention cannot be called to the increase of taxes which arises from bond issue — a psychological value.

Wherever it is humanly possible to do so, a district should finance its buildings by direct tax levies. If the building needs are so urgent that this is impossible, then bonds may be issued for a portion, permitting direct levies to take care of a part.

CONCLUSION

Programs of capital outlay may be financed either by cash payments or by bonds which constitute a prior lien on all the taxable property of the issuing districts. The procedures involved in the authorization and flotation of bond issues are extremely technical. Superintendents, business executives, and boards of education should be thoroughly familiar with the technicalities and should employ experts when necessary. Careful consideration should always be given to the type of bond, in the interest of succeeding generations who will be faced with the necessity of liquidating these obligations.

Selected References

ALEXANDER, CARTER, and THEISEN, W. W. *Publicity Campaigns for Better School Support*. World Book Company, Yonkers-on-Hudson, New York; 1921.

A good reference on school publicity as related to campaigns for the issuance of school bonds and the phases of school support.

ANDERSON, HOMER W. "School Bonds," *American School Board Journal*: Vol. 59, No. 1, page 37 (July, 1919).

Argues for a cash-payment plan of financing school buildings.

BROWN, FRASER. *Municipal Bonds*. Prentice-Hall, Inc., New York; 1922.

A statement of principles of law and custom governing the issuance of American municipal bonds with illustrations from the statutes of various states.

CHAMBERLAIN, LAWRENCE, and EDWARDS, GEORGE N. *Principles of Bond Investment*. Henry Holt & Co., New York; 1927.

A comprehensive treatment of the subject of bonds. The reader can find much of interest and benefit regarding all types of municipal loans as well as much other information about bonds.

CLARK, HAROLD F. "Index of School Bond Prices," *American School Board Journal*: Vol. 76, No. 6, page 67 (June, 1928), and subsequent numbers.

A noteworthy attempt to compare bond prices at regular intervals by the index-number technique.

CUBBERLEY, ELLWOOD P. *State and County Educational Reorganization*. The Macmillan Company, New York; 1914.

This book deals with an ideal constitution for the imaginary state of Osceola, supposed to be situated in the Upper Mississippi Valley. It contains sections relating to school corporations, taxation, and procedures to be followed by boards in the issuance of bonds.

ENGELHARDT, N. L. *A School Building Program for Cities (Contributions to Education, No. 96)*. Teachers College, Columbia University, New York; 1918.

Part III discusses financing a building program for cities under the heads of:

(1) Ability to pay for necessary additions to the school plant.

(2) Four different plans of payment for new school buildings.

— and ENGELHARDT, FRED. *Public School Business Administration*. Teachers College, Columbia University, New York; 1927.

Chapters XVIII and XIX deal exhaustively with school indebtedness and bond issues. Appendix C gives a complete transcript of proceedings.

FOWLKES, JOHN GUY. "Marketing School Bonds," *American School Board Journal*: Vol. 68, No. 1, page 76 (January, 1924).

An excellent article describing the activities involved in marketing school bonds.

— *School Bonds*. Bruce Publishing Company, Milwaukee, Wisconsin; 1924.

An authoritative statement covering every aspect of school bonds.

GARVEY, N. F. "Legal Status of School Bonds," *American School Board Journal*: Vol. 72: No. 3, page 51 (March, 1926), No. 4, page 55 (April, 1926), No. 5, page 47 (May, 1926).

Parts I and II define a bond and state the purposes for which bonds may be used.

Parts III and IV discuss the authorization of school bonds and the part the electorate plays in authorization.

Part V has a very good table illustrating the limitations of bonding power.

LINDSEY, E. E. *Problems in School Administration*. The Macmillan Company, New York; 1928.

Chapter VII discusses various plans of financing programs of capital outlay.

LYON, W. H. *Capitalization*. Houghton Mifflin Company, Boston; 1912.
Shows on page 152 how to test the merits of plans to pay off bonded indebtedness.

MACDOWELL, THEODORE L. *State vs. Local Control of Elementary Education* (Bulletin, 1915, No. 22, of the United States Bureau of Education). Government Printing Office, Washington.

A good discussion of restriction upon the rights of localities to borrow money and issue bonds. Good tables.

McELHANNON, J. C. "Judicial Interpretations of Laws Relating to School Bonds," *Elementary School Journal*: Vol. 23, pages 215-241 (November, 1922).

A digest of court decisions "which constitute a bond of legal principles more or less uniform and general in nature, which is of use to the layman and the professional officer of school bonds." Excellent discussion.

MEYER, CHARLES H. "The Marketing of School Bond Issues by Small Cities," *American School Board Journal*: Vol. 63, No. 2, page 36 (August, 1921).

Outlines the marketing of school bond issues by small cities.

PITTENGER, BENJAMIN F. *An Introduction to Public School Finance*. Houghton Mifflin Company, Boston; 1925.

Chapter VI discusses school indebtedness in detail. Annotated bibliography.

POWERS, LORIN C. "Serial Loans vs. Long-time Loans," *American School Board Journal*: Vol. 53, No. 1, page 19 (July, 1916).

Draws attention to the constantly growing revenues which are required for debt service or for interest on and the ultimate liquidation of borrowed money. Also discusses efficient methods of handling school revenues.

RAINEY, HOMER P. *Public School Finance*. The Century Company, New York; 1929.

Chapters VII, VIII, and IX deal with problems involving financing capital outlays, including a general discussion of school bonding, school publicity, and the formulation of a sound financial policy.

REED, R. R. "The Legal Enforcibility of Municipal Bonds," *American School Board Journal*: Vol. 58, No. 1, page 58 (January, 1919).

States legal principles which establish the security of municipal bonds. Also gives a few exceptional cases.

REEDER, WARD G. *The Business Administration of a School System*. Ginn & Co., Boston; 1929.

Chapter X deals with financing capital outlays for schools, including the voting of bonds, publicity, selling of bonds, and their redemption.

REEDER, WARD G. "Measuring the Ability of a Community to Finance a Building Program," *American School Board Journal*: Vol. 71: No. 5, page 65 (November, 1925), No. 6, page 65 (December, 1925).

Suggests methods of comparing schools' abilities to pay.

ROGERS, DON C. "School Corporations and Bond Issues," *American School Board Journal*: Vol. 67, No. 6, page 51 (December, 1923).

Points out similarities and contrasts between school corporations and private corporations.

SMITH, T. K. "How a School District Can Obtain the Best Price for Its Bonds," *American School Board Journal*: Vol. 70, No. 1, page 73 (January, 1925).

Suggests various methods by which a school district can secure better prices for its bonds.

SUMNER, C. "Concerning School Bonds," *American School Board Journal*: Vol. 58, No. 1, page 23 (January, 1919).

Advocates the paying of cash for school buildings.

TALBERT, WILFORD E. "To Bond or Not to Bond?" *American School Board Journal*: Vol. 56, No. 4, page 21 (April, 1918).

The writer gives a few fundamental principles which should be of assistance to school board members who are considering the question of raising money for school purposes.

TRUSLER, HARRY R. "Issuance of School Bonds," *American School Board Journal*: Vol. 58, No. 6, page 58 (June, 1919).

Discussion of legal decisions that affect school bond issues.

WILLETT, G. W. *The Public School Debt in Illinois*. The Macmillan Company, New York; 1924.

An exhaustive study of the Illinois school debt situation, made in coöperation with the Educational Finance Inquiry Commission.

APPENDIX

Form 1 (See Note 1, page 417.)

VOUCHER NO......

BOARD OF EDUCATION, LAWRENCE, KANSAS, DEBTORS:

Order No.

Order Date

Invoice Date

TO

Vender's Invoice No. (Notice—No invoices will be received unless
on these blanks)

Quantity	Item and Description	Our Item Number	Unit Cost	Total Cost

STATE OF KANSAS }
Douglas County } ss.

CENTRAL OFFICE INFORMATION

I DO SOLEMNLY SWEAR, That the foregoing account
is just and correct, and remains due and unpaid; that the
charges therein are the legal or ordinary charges. So help
me God.

When received.....

Delivered by.....

Checked by.....

Certified correct by

..... Sec.

Date ordered paid.....

Warrant No.

Approved for payment by

.....

.....

..... Com.

Sworn to and subscribed before me this day of, 192..

Clerk Board of Education—Notary Public

Acct.			Acct.			Building		
No.	Amount		No.	Amount		Code	Amount	

Extensions by

Kansas, Board of Education

[illegible]

KANSAS,.....19....

tion:
mittee respectfully re-
amined the following
their payment, by War-
in due form.

Auditing Committee

[illegible]

Monthly Financial Statement
of the Board of Education

Report for the month ending 19									
BUDGET CLASSIFICATION	Budget Appropriation	Amounts Expended Previous to this Month	Unexpended Balance at Beginning of Month	Expenditure during the Month	Unexpended Balance at the End of the Month	Estimated Unpaid Bills	Unencumbered Balance		
General control									
Instructional service									
Operation of school plant									
Maintenance of plant									
Fixed charges									
Debt service									
Capital outlay									
Auxiliary agencies and other sundry activities									
Totals									
Remarks									

¹ Published by C. F. Williams and Son, Inc., Albany, New York.

Detailed Statement of Expenditures of the Board of Education ¹

Report for the month ending.....

19.....

GENERAL CONTROL	BUDGET CLASSIFICATION	Budget Appropriations	Amounts Expended Previous to This Month	Unexpended Balance at Beginning of Month	Expenditure during the Month	Unexpended Balance at End of Month	Estimated Unpaid Bills	Unencumbered Balance
	2-1 School elections							
	2-2 Board of ed. and secy's office — salaries							
	2-3 Board of ed. and secy's office — supplies							
	2-4-5							
	2-6 Other expenses of business control							
	2-7 Superintendent's office — salaries							
	2-8 Superintendent's office — supplies							
	2-9 Superintendent's office — other expenses							
	2-10 Compulsory education — salaries							
	2-11 Compulsory education — other expenses							
	2-12-13							
	2-14 Other expense of education control							
	2-15 Total for general control							
INSTRUCTIONAL SERVICE	3-1 Supervisors — salaries							
	3-2 Supervisors — other expenses							
	3-3 Principal's office — salary of principal							
	3-4 Principal's office — salary of clerk							
	3-5 Principal's office — supplies							
	3-6 Principal's office — other expenses							
	3-7							
	3-8 Other expense of supervision							
	3-9 Salaries of teachers							
	3-10 Textbooks							
	3-11 Other supplies used in instruction							
	3-12 Commencement exercises and exhibits							
	3-13							
	3-14 Other expense of instruction							
	3-15 Total for instructional service							

¹ Published by C. F. Williams and Son, Inc., Albany, New York.

Form 6 — Continued

CAPITAL OUTLAY		Budget Appropriations	Amounts Expended Previous to This Month	Unexpended Balance at Beginning of Month	Expenditure during the Month	Unexpended Balance at End of Month	Estimated Unpaid Bills	Unencumbered Balance
BUDGET CLASSIFICATION								
8-1	Land							
8-2	New buildings							
8-3	Improvement of new grounds							
8-4	Alteration of old building (not repairs)							
8-5	Equip. new bldgs. — heat, light, plbg., & elect.							
8-6	Equipment of new buildings — furniture							
8-7	Equip. new bldgs. — instructional apparatus							
8-8	Equipment of new buildings — other equip.							
8-9	Equip. old bldgs. — heat, light, plbg., & elect.							
8-10	Equipment of old buildings — furniture							
8-11	Equip. old buildings — instructional appar.							
8-12	Equipment of old buildings — other equip.							
8-13								
8-14	Other capital outlay							
8-15	Total capital outlay							
AUXILIARY AGENCIES								
9-1	Libraries — salaries							
9-2	Libraries — books, repairs, and replacements							
9-3	Libraries — other expense							
9-4	Health service — medical inspection							
9-5	Health service — nurse service							
9-6	Health service — dental service							
9-7	Health service — other expense							
9-8	Transportation of pupils							
9-9	Care of children in institutions							
9-10	Provision of lunches							
9-11	Community lectures and social centers							
9-12	Recreation							
9-13	Other expenses							
9-14	Payts. to priv. schools & other civil div.							
9-15	Total exp. aux. agen. and other sundry activ.							
Totals								

Signed

Form 7 (See Note 5, page 417.)

[illegible]

Requisition for Annual Supplies
(Teacher's blank)

To the Principal of.....School

The following supplies will be needed in my.....
for the school year of 19.....19.....
(Room or Dept.)

Date.....Submitted by.....

Item Number	Item	Unit (Dozen, single box, pkg., etc.)	Total Required for 1 Year	On Hand at Close of Present Year	To Be Ordered for Next Year

Numbers in first column refer to article number in standard list of school supplies.

PAYABLE AT MOUNT VERNON TRUST CO., MOUNT VERNON, N. Y.	
No.	Date
THE CITY OF MOUNT VERNON, N. Y.	
Will Pay	Dollars \$
For Account of	Board of Education
	MOUNT VERNON, N. Y.
To the	Secretary
Order of	Asst. Superintendent of Schools
	City Comptroller
THIS CHECK WILL NOT BE PAID IF DETACHED FROM THE RECEIPT BELOW	

(Form 11 continued on page 396)

No.	Date
Received from THE BOARD OF EDUCATION CITY OF MOUNT VERNON, N. Y.	
In payment of	\$ _____
Deductions	_____
Amount of Check	_____
Signed	
PAYEE MUST NOT DETACH THIS RECEIPT BUT SIGN IT AND DEPOSIT WITH CHECK	

LINCOLN PUBLIC SCHOOLS

TIME REPORT

SCHOOL _____ For Period Ending _____ 192__

TEACHERS	DATE OF ABSENCE	CAUSE	SUPPLY	*NO. DAYS OF SERVICE		No. Times Tardy
				Teacher	Supply	
SUPERVISORS		DATE OF VISITS		REMARKS		

REMARKS

I hereby certify that the above Time Report is correct.

Principal _____

*NOTE—Under "No. Days of Service" include visiting days and days spent in attendance at educational meetings with permission of the superintendent of schools; also days when schools are closed by direction of the superintendent—Thanksgiving, Memorial Day, etc.—for which teachers are to receive their usual salary.

Form 13 (See Note 11, page 418.)

Service began	Assigned to
Service ended	
Annual salary	
Monthly salary	
Value of weekly service	
Value of daily service	

DENVER PUBLIC SCHOOLS

DAILY RECORD

DATE	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
SEPT.																											
OCT.																											
NOV.																											
DEC.																											
JAN.																											
FEB.																											
MAR.																											
APR.																											
MAY																											
JUNE																											
JULY																											
AUG.																											

S denotes sick leave.

P denotes paying substitutes.

L denotes loss.

T denotes tardy.

*The total of this column must not exceed the total number of days of sick leave as credited above.

†The total of this column must not exceed fifteen days.

REMARKS

YEAR

NAME

Check whether appointed teacher

☐

or permanent supply

☐

ACCOUNT

					DAYS SICK LEAVE				DR.	CR.						
					Balance at beginning of year											
					Allowed this year											
					Used this year											
					Unused at end of year											
22	23	24	25		*Sick leave	†Paying supply	Loss	Visiting day	Tardy	DATE	Monthly Salary	Extra For §	Add	Deduct Paying Supply	Deduct Loss	Order
										SEPT.						
										OCT.						
										NOV.						
										DEC.						
										JAN.						
										FEB.						
										MAR.						
										APR.						
										MAY						
										JUNE						
										JULY						
										AUG.						
TOTAL										TOTAL						

§P.G. denotes playground.
 Ath. denotes athletics.
 Sp. denotes special school.

School District Number One
In the City and County of Denver
and State of Colorado

PAY ROLL

School _____

Secretary's No. _____

192 _____

School month commencing _____, and ending _____

WARRANT NO.	Name No.	NAMES	Regular Monthly Salary	Regular Annual Salary	EXTRAS		Deduc- tions	Payable	Remarks	Name No.
					For	For				
	1									1
	2									2
	3									3
	4									4
	5									5
	6									6
	7									7
	8									8
	22									22
	23									23
	24									24

CORRECT :

Secretary _____

Form 15 (See Note 13, page 418.)

INSTRUCTION SHEET

DO NO WORK OTHER THAN LISTED BELOW

SCHOOL	ACCOUNT NO.	DATE	JOB NO.
DESCRIPTION		DEPARTMENT	
		<u>APPROVED</u>	

WORKMAN'S REPORT

[illegible]

DENVER PUBLIC SCHOOLS

DAILY TIME CARD

Date _____

Name _____

Department_____

SCHOOL	Job No.	Hours	Farefare
	TOTAL		

Correct _____

Foreman

NOTE This card **MUST** be filled out **DAILY** and filed in office not later than the following day if workman is to receive credit for service.

TEETH JOB SHEET

JOB NO.

DATE _____ACCOUNT NO.

MATERIAL

Amount Purchased

Am't from Storehouse

DESCRIPTION

Req. or Order No.

DATE _____AMOUNT

WORKMAN

DATE _____

BOARD OF EDUCATION, CITY OF WINFIELD, KANSAS

(For Fire or Tornado Policies)

This policy of \$———— covers pro rata on each of the following specific amounts of insurance, to wit:

MAIN HIGH		
ITEM NO. 1	\$73,600.00	On the three-story brick and concrete, Barrett Specification composition-roof building and basement, known as the Main High School, situated on lots 7, 8, 9, and 10 of Block 208 Fullers Addition.
ITEM NO. 2	\$12,000.00	On furniture, fixtures, and equipment in above described Main High School building.
JUNIOR HIGH		
ITEM NO. 3	\$113,600.00	On the three-story and basement brick and concrete, composition-roof building, known as the Junior High School, situated on the northwest corner of Block 208 Fullers Addition.
ITEM NO. 4	\$6,400.00	On furniture, fixtures, and equipment in above described Junior High School building.
MANUAL ARTS		
ITEM NO. 5	\$58,800.00	On the three-story and basement brick and concrete, composition-roof building, including two-story connecting corridors to Main High School, known as the Manual Arts building, situated on lots 10, 11, and 12 of Block 208 Fullers Addition.
ITEM NO. 6	\$8,000.00	On furniture, fixtures, and equipment in the above described Manual Arts building and in the connecting corridors above mentioned.
LOWELL		
ITEM NO. 7	\$46,000.00	On the two-story and basement stone, shingle-roof building, known as the Lowell School, situated on Block 154 Loomis Addition.
ITEM NO. 8	\$2,800.00	On furniture, fixtures, and equipment in the above described Lowell School building.
WEBSTER		
ITEM NO. 9	\$28,000.00	On the two-story and basement stone, shingle-roof building, known as the Webster School, situated on the south half of Block 291 Courier Place Addition.
ITEM NO. 10	\$2,080.00	On furniture, fixtures, and equipment in the above described Webster School building.
STEVENSON		
ITEM NO. 11	\$43,200.00	On the two-story and basement brick and concrete, composition-roof building, known as the Stevenson School, located on tract of land 320 ft. by 150 ft. situated northeast of the intersection of Eighth and Gary streets.
ITEM NO. 12	\$2,400.00	On furniture, fixtures, and equipment in the above described Stevenson School building.

CENTRAL ITEM NO. 13	\$12,000.00	On the three-story and basement stone, slate-roof building, and the two-story and basement stone, shingle-roof addition attached thereto, together known as the Central School, situated on Block 188 Original Townsite.
ITEM NO. 14	\$1,600.00	On furniture, fixtures, and equipment in the above described Central School building.
BRYANT ITEM NO. 15	\$30,400.00	On two-story and basement stone, shingle-roof building, known as the Bryant School, situated on the east half of Block 50 Manning Addition.
ITEM NO. 16	\$2,080.00	On furniture, fixtures, and equipment in the above described Bryant School building.
BRYANT KINDERGARTEN ITEM NO. 17	\$2,160.00	On the one-story frame, composition-shingle-roof building, known as the Bryant Kindergarten, situated on the east half of Block 50 Manning Addition.
ITEM NO. 18	\$480.00	On furniture, fixtures, and equipment in the above described Bryant Kindergarten.
IRVING ITEM NO. 19	\$32,000.00	On the two-story and basement, stone, shingle-roof building, known as the Irving School, situated on Block 222 Andrews Addition.
ITEM NO. 20	\$2,240.00	On furniture, fixtures, and equipment in the above described Irving School building.
IRVING KINDERGARTEN ITEM NO. 21	\$2,160.00	On the one-story frame, composition-shingle-roof building, known as the Irving Kindergarten, situated on Block 222 Andrews Addition.
ITEM NO. 22	\$480.00	On furniture, fixtures, and equipment in the above described Irving Kindergarten.
HEATING PLANT ITEM NO. 23	\$20,000.00	On the one-story and basement combined, stone, composition-roof building, known as the Heating Plant, and a one-story brick stucco, composition-roof addition attached thereto and used as a general workshop, situated on Block 188 Original Townsite. (This item includes the concrete smoke stack.)
ITEM NO. 24	\$640.00	On furniture, fixtures, and equipment in the above described Heating Plant and Addition.
Total on buildings.....		\$461,920.00
Total on furniture, fixtures, and equipment.....		41,200.00
Grand Total		\$503,120.00

(Continued on page 406)

It being the intention of this insurance to cover all property of the assured of whatever kind or nature occupied or leased in whole or in part, and owned (and) or used for school, office, storage, or other purposes by the assured, its own or for which it may be legally liable, including liability for all property on which liability is required to be specifically assumed by the printed conditions of this policy. -

Signs and awnings are covered under fire policies only.

It is understood and agreed that this policy does not include nor cover accounts, bills, currency, deeds, evidences of debt, money, notes, or securities; automobiles, trucks; and the value of such excluded property shall not be used for co-insurance purposes.

It is understood and agreed that the word "noon" as used in this policy shall be construed to mean 12:00 o'clock noon of the "Standard" time of the place where the property insured by this policy is located.

Permission granted for use of buildings for occasional public meeting purposes.

Other insurance permitted.

The following clauses and permits are in accordance with the rules and uniform forms, and the "Uniformity" cut applies only thereto.

This policy continues in full force and effect during vacations between school terms and at such times as school is not actually in session, provided that, if this form is attached to a fire policy and any building is abandoned for school purposes for an indefinite period without written permission hereon, then this policy shall be void as to coverage on specific building abandoned.

Permission granted for buildings other than those used for school purposes to remain vacant for a period not exceeding sixty days at any one time.

ALTERATIONS AND REPAIRS PERMIT **(This Clause Void when Attached to Tornado Policy)**

Permission granted for mechanics to be employed for more than fifteen (15) days in making alterations, improvements, and repairs to any building herein described, and in constructing additions or sheds which attach to and communicate with such building, and the insurance, if any hereunder, on such building, is hereby made to cover such alterations, improvements, repairs, attached and communicating additions and sheds, also building materials and supplies therefor, while contained therein or on the premises immediately adjacent thereto; and the insurance, if any hereunder, on contents of any building herein described is hereby made to cover in such attached and communicating additions and sheds to said building; but any change in a fire wall, the removing or replacing of the joists or supports of a floor, or the construction of additional stories to any building herein described, when mechanics are employed for such purposes for more than fifteen (15) days at any one time, shall not be permitted by this policy, unless specifically included by endorsement attached hereto.

WORK AND MATERIALS CLAUSE

Permission granted for such use of the premises as is usual and incidental in the business of the Board of Education as conducted therein, and when not in violation of any law, statute, or municipal restriction, to keep and use all articles and materials usual and incidental to said business, in such quantities as the exigencies of the business require.

MOVING PICTURE MACHINE PERMIT

Permission is granted, when not in violation of any law, statute, or municipal restriction, to use a moving picture machine in the premises described in this policy. (Moving picture machines and films excluded under Fire Policies.)

REDUCED RATE CONTRIBUTION CLAUSE
(For Use on Either Fire or Tornado Policies)

In consideration of the rate at (and) or form under which this policy is written, it is expressly stipulated and made a condition of this contract that this company shall be held liable for no greater proportion of any loss than the amount hereby insured bears to 80 per cent of the actual cash value of the property described herein at the time when such loss shall happen; but if the total insurance upon such property exceeds 80 per cent at the time of such loss, then this company shall only be liable for the proportion which the sum hereby insured bears to such total insurance, not exceeding the actual amount of loss to the property insured.

WAIVER OF INVENTORY OR APPRAISEMENT CLAUSE

If this policy shall be subject to the conditions of a Reduced Rate Contribution Clause, it is also made a condition that in the adjustment of any loss hereunder, provided the same does not exceed 2 per cent of the total insurance carried, it shall not be a part of compliance with the conditions of the Reduced Rate Contribution Clause to inventory (and) or appraise the undamaged property.

LIGHTNING AND ELECTRICAL EXEMPTION OR DYNAMO CLAUSES

(These Clauses Void when Attached to Tornado Policy)

Lightning Clause: Except as provided in the Electrical Exemption or Dynamo Clause below, this policy shall cover any direct loss or damage caused by lightning, meaning thereby the commonly accepted use of the term lightning, and in no case to include loss or damage by cyclone, tornado, or windstorm, not exceeding the sum insured, nor the interest of the insured in the property, and subject in all other respects to the terms and conditions of this policy. Provided, however, if there shall be any other insurance on said property this company shall be liable only pro rata with such other insurance for any direct loss by lightning, whether such other insurance be against direct loss by lightning or not.

Electrical Exemption or Dynamo Clause: If dynamos, exciters, lamps, motors, switches, or other electrical appliances or devices are covered under this policy, this company shall not be liable for any electrical injury or disturbance, whether from artificial or natural causes, unless fire ensues, and then only for such loss or damage to them as may be caused by such ensuing fire; this limitation to be operative notwithstanding any provision to the contrary in the lightning clause attached.

Attached to and forming part of Policy No.

issued at its

Agency.

Dated

19

..... Agent.

WM. B. ITTNER, *Architect*, St. Louis, Mo.

CONTRACT AND BOND

THIS CONTRACT, made and entered into this _____ day of _____ A. D.
One Thousand Nine Hundred and _____ by and between _____

_____ party of the first part, hereinafter designated the Owner.

_____ party of the second part, hereinafter designated the Contractor, and _____

_____ party of the third part, the Surety herein,
WITNESSETH:

THE CONTRACTOR covenants and agrees to _____

_____ in accordance with the drawings and the specifications adopted for said work, which are made a part of this contract. The Contractor further covenants and agrees to and with the Owner to comply with all City ordinances regulating the erection of buildings, and to indemnify and save harmless the Owner against any and all loss, judgments, costs, and expenses in any and all suits or actions brought against it, for or on account of any loss, damages, or injuries sustained by any person in the construction of said work, or in consequence of any negligence in the construction or guarding of the same.

In case of inclemency of weather, the Contractor shall effectually cover, protect, and secure said work, and prevent admission of wet through the apertures; and all damages occasioned thereby, or otherwise, during the progress of the work, or by depredations, storms, or fire, are to be borne and reinstated by and at the expense of the Contractor; and the Contractor agrees to remove all dirt and rubbish from the said premises upon completion of said work.

The Contractor shall furnish at his own cost and expense all material used in the construction of said work, all such material to be of good and sound quality, and the Contractor shall also furnish at his own expense all labor and work and all cartage, scaffolding, tackles, and tools, and all things necessary to complete said work in a good and workmanlike manner to the perfect satisfaction of the Architect employed to superintend the work to be done under the provisions of this contract and the said specifications and the drawings furnished for said work, and to give all explanations thereon, and to do all things thereto incident, which may become necessary to the true intent and meaning thereof, although not specifically stated in said specifications, or shown on said drawings.

Should it appear that any of the work hereby intended to be done, or matters relative thereto, are not fully detailed or explained in this contract and in the said specifications and drawings, the Contractor shall apply to the Architect for such further detailed explanations, and shall perform his orders as part of this contract. The Architect shall be at liberty to make any deviation from or alteration in the plan, form, construction, detail, or execution described by the specifications and drawings, and to direct additions thereto, without invalidating or rendering void this contract; and the Contractor covenants and agrees to make all such alterations and additions; and in case of any difference in the expense, an addition to or abatement from the contract price shall be made, the same shall be determined in writing by the Architect. The Architect shall have full power and lawful authority to reject the whole or any part or portion of said material or work which may not, in his opinion, be in strict accordance with the letter and spirit of these presents.

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The Architect's opinion, certificate, report, or decision on all matters shall be binding and conclusive on the Contractor, and in case the Contractor shall fail to fulfill any order of the Architect, then the Owner or the Architect shall have full power and lawful right to terminate forthwith any further work by the Contractor under this contract, and to have the work done by other parties at the cost of the Contractor and Surety, and the cost of such work and material shall be audited and certified by the Architect, whose certificate thereon shall be conclusive upon the parties.

The finishing of said work, including all alterations and additions provided for under the terms of this contract, is to be proceeded with, with all reasonable dispatch, and the same shall be completed and delivered up to the Owner in perfect order and condition, fit for use and occupancy on or before.....

..... it being agreed that the Contractor shall pay to the Owner as and for liquidated damages the sum of Dollars for every day expiring after that day before the completion and delivery of said work as aforesaid, which sum the parties hereto stipulate and agree will be the reasonable amount of damages the Owner will have sustained by delay in the completion of said work, and which sum may be deducted by the Owner from any moneys due, or to

(Continued on page 410)

become due, under this contract to the Contractor. And this condition is not to be made or rendered void by any alteration or additional work being performed, but all such work, including such alterations and additions, shall be completed within the time aforesaid, unless the time shall have been extended in writing by the Architect.

In the event of unnecessary or avoidable delay, in the opinion of the Architect, on the part of the Contractor to prosecute said work in a good and speedy manner, then the Owner or Architect shall have the right and power, after having given the Contractor three days' notice in writing, to employ such labor and furnish such materials as may be necessary for the timely and speedy completion of said work, and any damage incurred through such default shall be audited and certified by the Architect, whose certificate thereon shall be conclusive upon the parties; and the cost and expense of such labor and material may be deducted from any moneys due, or that may become due, to the Contractor under this agreement; it being understood, however, that nothing herein contained and no deductions made under the terms of this contract from moneys due, or to become due, to the Contractor, shall in any way be construed as impairing the right of the Owner to hold the Contractor or Surety liable on their bond for any breach of any of the conditions of this contract or of their bond.

The Contractor covenants and agrees to repay to the Owner all sums of money which the Owner may pay to other persons on account of work and labor done, or material furnished which the Contractor may fail to do or to furnish, and to pay to the Owner all damages sustained by reason of non-performance or mal-performance on the part of the Contractor of any of the covenants, conditions, stipulations, or agreements of said contract, including all alterations, modifications, and additions as aforesaid, and to make payment to the parties furnishing the same for all material used in and labor performed on the work provided for in this contract, and in the specifications and drawings adopted for said work, including such alterations, modifications, and additions, whether by sub-contract or otherwise.

THE OWNER, for and in consideration of the faithful performance of said work as aforesaid, agrees and is bound to pay unto the Contractor the sum of

in installments as follows, to wit: _____ Dollars,

of the contract to be paid on the Architect's certificate in writing that the work entitled to such payment has been done to his satisfaction.

And

delivery of said work, after the same has been accepted by the Architect, and after all receipts of sub-contractors for work and material furnished to said building have been produced to the Architect, should he see fit to require such production; and provided said work shall have been done in all respects in compliance with the terms and provisions

of this contract and the aforesaid drawings and specifications, and all payments of additional moneys that may become due to the Contractor hereunder may be made in the same manner and proportions.

Provided that the wages of artisans and laborers, and all those employed by or furnishing material for said work shall have been paid and satisfied, and in case the Contractor shall fail so to pay and to satisfy all and every claim and demand against said building as aforesaid, the Owner may apply the moneys due and coming to the Contractor towards paying and satisfying such claims and demands, and the Owner is herewith given the right to apply moneys due and coming to the Contractor hereunder towards paying any indebtedness or claim heretofore accrued or which may hereafter become due to the Owner from the Contractor on any account whatsoever, and the amount for such payment shall be charged against the balance due the Contractor hereunder; provided that nothing herein contained, nor any variation from the amounts of the installments or from the manner and times of their payments shall be construed as impairing the right of the Owner, or of those to whose benefit the bond given herein shall inure, to hold the Contractor or Surety liable on said bond for any breach of the conditions of the same, nor as imposing upon the Owner any obligation to laborers, material men, sub-contractors, or sureties, to pay or to retain for their benefit any moneys coming to the Contractor hereunder.

No assignment of this contract nor of any interest herein shall be valid or binding on the Owner without the written assent thereto of the Owner and of the Surety herein, and such assignment so assented to shall substitute the assignee for the Contractor herein and shall constitute the assignee a joint principal co-obligor with the Contractor in the bond herein.

FOR THE FAITHFUL PERFORMANCE of all and singular the terms, agreements, stipulations, conditions, and covenants in this contract contained and to be observed and performed by the Contractor, the Contractor, as principal, and the Surety herein, in consideration of all the premises, hereby jointly and severally bind themselves and their respective heirs, executors, administrators, successors, personal representatives, and assigns unto the Owner in the sum of

Dollars, lawful money of the United States.

It is understood and agreed that the Surety expressly waives whatever right it may have to be notified of any alterations, modifications, and additions which may be directed by the Architect under the terms hereof, and also waives whatever right it may have to be notified of or to consent to any extension of time for the performance of this contract, which may be allowed by the Architect, and acknowledges itself to be bound for all such alterations, modifications, additions, and extensions as though proper notice thereof had been given to it, and it had consented thereto; provided, always that the total cost of such alterations, modifications, and additions shall not exceed the sum of

over and above the contract price mentioned in this contract.

(Continued on page 412)

It is further understood and agreed that this bond shall inure to the benefit of all parties alike who have supplied material for or performed labor on the work herein set out, whether by sub-contract or otherwise, in proportion to their respective demands remaining unpaid, subject, however, to the satisfaction of any and all demands the Owner may have against the Contractor and the Surety; provided that no suit shall be instituted by any such party after the expiration of ninety days from the completion of the above contract, and that the Owner shall be protected against costs in any such suit.

IN WITNESS WHEREOF,

party of the first part herein, and

the party of the second part herein, as principal, and

the party of the third part herein, as Surety, have all hereunto set their hands and seals respectively in triplicate on the day and date first above written.

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Attest

Signed in my presence,

By

SEAL

SEAL

SEAL

SEAL

BOARD OF EDUCATION
320 So. Broad Street
Elizabeth
New Jersey

19

Please quote prices, in the spaces provided, for which you will furnish the articles listed below in accordance with the specifications, and submit this quotation on or before _____
If prices are based on a substitute, the specification must be changed accordingly.

THOMAS F. MACKESSY,
Business Manager.

QUOTATION

Place of delivery _____

Time of delivery _____ days

Delivery charges F. O. B. _____ School Order No. _____

QUANTITY	SIZE	ARTICLE	LIST	DISCOUNT	NET	TOTAL

PERPETUAL INVENTORY FORM:

ITEM No.		UNIT QUANTITY		PERPETUAL INVENTORY						
INDEX No.		UNIT COST		SCHOOL						
SIZE OR KIND		WHERE USED		BIN NO.						
Date	Rec'd	On Hand	Dist'd	K'g'tn	Grade I	Grade II	Grade III	Grade IV	Grade V	Grade VI
Total										

K'g'tn = Kindergarten
Form No. _____

Average Daily Attendance

¹ From Robert B. Taylor's *Principles of School Supply Management* (Contributions to Education, No. 228), page 76. (Published by Teachers College, Columbia University, New York; 1926. Used by permission.)

EXPIRATION REGISTER

SCHOOL NO.....

**BOARD OF EDUCATION
PATERSON, NEW JERSEY**

LOCATION.....

[illegible]

NOTES

NOTE 1. Form 1 is the voucher form accompanying the voucher register. It is so arranged that it can be written on the typewriter at the same time the purchase order is issued. It provides for the supporting affidavit, checking by proper persons, payment data, and blank spaces for accounting data.

A note appended to this form reads: "Accounts must be fully itemized. Specify number of each article furnished and unit price. If for services rendered, give dates, nature of service, number of days or hours, and rate."

NOTE 2. Form 2 shows a voucher register sheet used by a school district where a distribution by funds is a legal requirement. It also provides for a functional classification. This form carries not only the voucher date and number, but the warrant number and date as well. Where the signatures of an officer of the board and an auditing committee are required, provision has been made for these.

NOTE 3. Form 3 shows one of the expense-distribution record sheets based on Hiram C. Case's *Handbook of Instructions for Recording Disbursements for School Purposes* (published by C. F. Williams and Son, Inc., Albany, New York.) Six other forms follow this general plan. This form is reproduced here because it is typical and widely used. The accounts are essentially the same as those outlined in Chapter VI.

NOTE 4. Forms 5 and 6 show types of monthly statement used with accounting forms such as Form 3. The exact condition of each controlling account is shown by these reports.

NOTE 5. Form 7 shows a journal sheet used largely for adjusting entries. It is a stock form.

NOTE 6. Form 8 shows the general ledger sheet which is used for all types of ledger accounts.

NOTE 7. Form 9 shows an annual supply requisition blank. It contains the essential features of any adequate

requisition form, whether it be annual or special, teacher's or principal's.

NOTE 8. Form 10 illustrates a purchase order which should be issued in duplicate for the smaller school systems and in triplicate for the larger ones, the third copy being sent to the stockroom.

It provides for "accounting at the source" — that is, the account or accounts to be charged may be indicated on the blank in the proper spaces. This procedure is imperative, of course, if the accounting system is on an accrual basis.

NOTE 9. Form 11 shows a school warrant in the form of a voucher warrant.

NOTE 10. Form 12 is a time report, submitted by each building fortnightly. The one submitted at the close of the first two weeks contains the names of all teachers and supervisors. Subsequent reports contain the names of substitutes only.

NOTE 11. Form 13 is a simple form of pay-roll ledger which controls contractual salaries.

NOTE 12. Form 14 is the pay roll made out in the central office after the time reports have been received from the principals. This form is used for all employees except maintenance men. The form for the latter includes a building distribution form on the sheet. An addressograph is used to place names on the pay roll, warrant, and warrant register. Window envelopes are used for mailing salary warrants to employees.

NOTE 13. Form 15 is a work-instruction sheet, or work order, issued by the executive officer in charge of buildings and grounds to a foreman. Provision is made for listing the time of workmen and the materials used.

NOTE 14. Form 16 shows a time card which should be kept by each laborer and filed at the close of each day with the foreman's certification. It should record the exact

time spent on each job, the latter being designated by number.

NOTE 15. Form 17 is a job-record sheet which summarizes the labor and materials on a given job. Note that the job number is carried on this sheet as well as on the instruction sheet and the laborer's time card.

NOTE 16. Form 19 is a builder's contract which is signed jointly by the surety company furnishing the faithful-performance bond. It should be noted that provision is made for minor changes in plans and specifications without the consent of the bonding company. This form of contract is especially commendable (see Chapter XIV).

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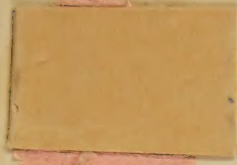
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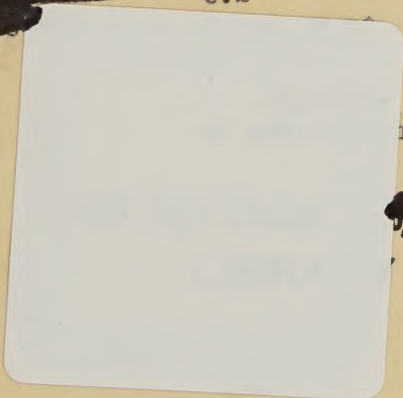


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